

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a **Minor, Industrial** permit. The discharge of once-through, non-contact cooling water results from the production of chilled water for air conditioning supplied to the Pentagon. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: Pentagon Reservation
Department of Defense
Washington Headquarters Services
Federal Facilities Division
Room 5E 330A
1155 Defense Pentagon
Washington DC 20030
SIC Code : 1 (Chilled Water and Steam)
1 (National Security)

Facility Location: 425 Old Jefferson Davis Highway, Arlington, VA 22202 County: Arlington

Facility Contact Name: Joseph D. Eichenlaub, Environmental Sustainability and Energy Branch Manager, Federal Services Directorate (FSD) Telephone Number: 703- 614-9583

Facility E-mail Address: Joseph.d.eichenlaub.civ@mail.mil
2. Permit No.: VA0032000 Expiration Date of previous permit: 12/9/2015

Other VPDES Permits associated with this facility: VAR040103 (Small MS-4)

Other Permits associated with this facility: Registration No. 70030 (Air); EPA ID No. VA2210090021 (RCRA); PBR197 (Solid Waste Incinerator); Petroleum Reg. ID 3003004

E2/E3/E4 Status: NA
3. Owner Name: Department of Defense
Owner Contact/Title: Craig Georg Telephone Number: 703-695-3420
Owner E-mail Address: craig.m.georg.civ@mail.mil
4. Application Complete Date: 8/3/2015
Permit Drafted By: Anna Westernnik Date Drafted: 11/16/2015
Draft Permit Reviewed By: Doug Frasier Date Reviewed: 11/17/2015
Draft Permit Reviewed By: Alison Thompson Date Reviewed: 11/30/2015
Public Comment Period : Start Date: 6/13/2016 End Date: 7/13/2016
5. Receiving Waters Information: **See Attachment 1** for the Roaches Run Flow Frequency Determination.
Drainage Area at Outfall 001: 0.53 mi² Outfall 001 River Mile: 1A-R0R.46
Drainage Area at Outfall 002: 0.02 mi² Outfall 002 River Mile: 1A-R0R.46
Stream Basin: Potomac River Subbasin: Potomac River
Section: 6 Stream Class: II
Special Standards: b, y Waterbody ID: VAN-A12E
7Q10 Low Flow: Tidal 7Q10 High Flow: Tidal
1Q10 Low Flow: Tidal 1Q10 High Flow: Tidal
30Q10 Low Flow: Tidal 30Q10 High Flow: Tidal
Harmonic Mean Flow: Tidal 30Q5 Flow: Tidal

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<input checked="" type="checkbox"/> State Water Control Law	<input type="checkbox"/> EPA Guidelines
<input checked="" type="checkbox"/> Clean Water Act	<input checked="" type="checkbox"/> Water Quality Standards (VA and D.C.)
<input checked="" type="checkbox"/> VPDES Permit Regulation	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> EPA NPDES Regulation	

7. Licensed Operator Requirements: NA

8. Reliability Class: NA

9. Permit Characterization:

<input type="checkbox"/> Private	<input type="checkbox"/> Effluent Limited	<input checked="" type="checkbox"/> Possible Interstate Effect
<input checked="" type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input checked="" type="checkbox"/> Whole Effluent Toxicity Program Required	<input type="checkbox"/> Interim Limits in Permit
<input type="checkbox"/> WTP	<input type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> TMDL	<input checked="" type="checkbox"/> e-DMR Participant	

10. Wastewater Sources and Treatment Description:

The Pentagon is the headquarters for the Department of Defense. The Department of Defense operates a heating and refrigeration plant known as the Pentagon Heating and Refrigeration Plant (HRP) that provides steam for heating and chilled water for air conditioning to the Pentagon.

Water is drawn from the Boundary Channel Lagoon (District of Columbia (D.C.) waters) for non-contact cooling water for the chiller condensers and is then discharged without treatment into Roaches Run, an inactive waterfowl sanctuary near the Ronald Reagan National Airport. An intake bar screen, a traveling screen, a cooling water sump, condenser water pumps, ten basket screens, and ten chillers are used in this process (the system is designed to operate a maximum of eight chillers at a time).

Non-contact cooling water drawn from the Boundary Channel Lagoon at N 38° 47' 48.1", W 77° 30' 17.5" travels through a number of screens and pumps prior to being utilized in the chiller condensers and ultimately discharged at Outfall 002. The intake structure at the Boundary Channel Lagoon consists of a surface boom, rake, and bar screen. The bar screen prevents large debris from entering the gravity-fed 96-inch diameter intake line.

Water from the lagoon travels through the 96-inch diameter line and enters the HRP. The water then passes through a traveling screen with 3/8-inch mesh. Small debris from the traveling screen is collected in a trough, placed into dumpsters, and taken to a sanitary landfill. After the traveling screen, the water is gravity fed to one of two 44 feet deep cooling water sumps. The water is then pumped from the sumps through vertical basket strainers.

The vertical basket strainers remove fine particulates such as sand through 1/42-inch mesh. They are backwashed automatically using pressure differential. After traveling through the vertical basket strainers, a copper corrosion inhibitor, Mexel 432/0 (see **Attachment 2-MSDS**), is added to the water at a concentration ranging from one to four ppm per day. The water then passes through the copper condensers located on the chiller units. There are 4,300 copper condenser tubes per chiller. Water travels through the bottom of the condenser units where heat is exchanged, loops through the top of the condenser, and is discharged into copper tubes within the condenser. The water has no contact with the materials within the chillers.

The water is discharged at Outfall 002 into Roaches Run. Outfall 002 is the primary discharge outfall; Outfall 001 is only used during maintenance or emergencies. The discharged non-contact cooling water also contains backwash from the vertical basket strainers.

The system is designed to operate a maximum of eight condenser water pumps at a time, which typically provides condenser water for eight chillers and yields a maximum design flow rate of 130 MGD. However, the flow rate (and number of pumps operating) varies depending on the time of year. More pumps are operated during the warmer months (June through August), thereby increasing the condenser water flow rate. See **Attachment 3** for pump operational details.

See **Attachment 4** for the NPDES Permit Rating Worksheet.

See **Attachment 5** for a facility schematic/diagram.

TABLE 1 – OUTFALLS				
Outfall Number	Discharge Sources	Treatment	Max 30-day Flow	Outfall Latitude/Longitude
001	<ul style="list-style-type: none"> Non-Contact Cooling Water Surplus Cooling Water Basket Strainer Backwash 	See Item 10 above	130 MGD	38° 51' 55" N 77° 02' 46" W
002	<ul style="list-style-type: none"> Non-Contact Cooling Water Surplus Cooling Water Basket Strainer Backwash 	See Item 10 above	130 MGD	38° 52' 07" N 77° 02' 36.6" W
See Attachment 6 for Topographic Map 204D (Alexandria).				

11. Solids Treatment and Disposal Methods:

Small debris from the intake traveling screen is collected in a trough, placed into dumpsters, and taken to a sanitary landfill.

12. Discharges in Waterbodies VAN-A12R and VAN-A12E:

Although the discharge from this facility is to an estuary, the discharge from the adjacent riverine waters were noted in this analysis since their close proximity affects the waterbody.

TABLE 2 INDIVIDUAL VPDES DISCHARGES WITHIN WATERBODY VAN-A12R and VAN-A12E			
Description	Type	Latitude/Longitude	Rivermile
VA0089796 -- The Nature Conservancy	0.0144 Groundwater Remediation System	38° 52' 57"/77° 06' 47"	0.27 Lubber Run, UT
VA0025143 – The Arlington County WPCP	40 MGD Municipal Wastewater Discharge	38° 50' 37.74"/77° 03' 39.30"	1.27 Four Mile Run
VA0032000 – U.S. Department of the Defense, Pentagon	Industrial Wastewater Discharge	Outfall 001 38° 51' 55"/77° 02' 46" Outfall 002 38° 52' 07"/77° 02' 36.6"	0.46 Roaches Run (Outfalls 001 and 002)
VA0087068 – Alexandria Combined Sewer System	Wet Weather Flows of Combined Sewage	Outfall 001 38° 48' 36"/77° 02' 49" Outfall 002 38° 47' 30"/77° 02' 49" Outfall 003 38° 48' 15"/77° 03' 33" Outfall 004 38° 48' 13"/77° 03' 34"	108.72 Oronoco Bay 0.60 Hunting Creek 0.70 Hooffs Run 0.63 Hooffs Run

TABLE 3
GENERAL VPDES DISCHARGES WITHIN WATERBODY VAN-A12R and VAN-A12E

Single Family Homes		
Permit Number	Facility Name	Receiving Stream
VAG406537	Hogan Philip Residence	Chestnut Lick, UT
VAG406502	Forth Kary and Janet Residence	Chestnut Lick, UT
VAG406534	Bruce and Lee Residence	Chestnut Lick, UT
Storm Water Industrial		
Permit Number	Facility Name	Receiving Stream
VAR050997	Red Top Cab - Transportation Incorporated	Potomac River
VAR051096	WMATA - West Falls Church Metro Rail Yard	Pimmit Run, UT
VAR051097	WMATA - Four Mile Run Bus Garage	Four Mile Run
VAR051296	US Joint Base - Myer Henderson Hall	Potomac River, UT
VAR051421	Arlington County Water Pollution Control Facility	Four Mile Run
VAR051790	US NPS - George Washington Memorial Pkwy Maintenance	Four Mile Run, UT
MS4 Permits		
Permit Number	Facility Name	Receiving Stream
VAR040103	The Pentagon	Potomac River
VA0088579	Arlington County	Gulf Branch, Donaldson Run, Potomac River (A), Windy Run, Spout Run, Colonial Village/Rocky Run, Potomac River (B), Four Mile Run (contains the following major streams: Lower Long Branch, Doctor's Branch, Lubber Run, and Upper Long Branch), Little Pimmit Run, Pimmit Run, and Roaches Run.
VAR040127	Arlington County Public Schools	Four-Mile Run, Pimmit Run
VAR040139	Arlington National Cemetery	Potomac River
Concrete		
Permit Number	Facility Name	Receiving Stream
VAG110087	Virginia Concrete Company Inc - Shirlington	Four Mile Run
Carwash		
Permit Number	Facility Name	Receiving Stream
VAG750207	Enterprise Rent A Car -- 2778 Arlington Mill Dr.	Four Mile Run
VAG750208	Avis Car Rental	Rocky Run
VAG750217	Z & II Inc	Four Mile Run, UT
VAG750155	Universal Air and Vacuum Service	Four Mile Run
VAG750236	Falls Church Auto Body, Limited	Four Mile Run, UT
VAG750240	Spectrum Auto Painting and Collision, Inc.	Four Mile Run
Petroleum		
Permit Number	Facility Name	Receiving Stream
VAG830321	Halstead at Arlington	Long Branch
VAG830340	1812 Holdings LLC Property	Little River in the Potomac River
VAG830471	Jackson Crossing	Potomac River, UT
VAG830473	Founders Square Phase C1 - North Office	Spout Run, UT
VAG830478	Sunoco 0004 4602 - Culmore	Long Branch, UT
VAG830480	M Flats Crystal City	Potomac River, UT (via MS4)
VAG830486	Marymount University - Ballston Campus	Lubber Run, UT (MS4)

13. Material Storage:

All water conditioning chemicals are stored in a hazard storage location of the basement of the main HRP building. This storage location has secondary containment consisting of sloped concrete floors that discharge to the Arlington County sanitary sewer. See **Attachment 7** for a summary of stored chemicals.

14. Site Inspection:

Performed by Amy Dooley, Lisa Janovsky, and Anna Westernik on May 12, 2015 (see **Attachment 8**).

15. Receiving Stream Water Quality and Water Quality Standards:**a. Ambient Water Quality Data**

This facility discharges to Roaches Run, which has not been monitored or assessed. Roaches Run drains into the tidal freshwater Potomac River, which falls under the jurisdiction of D.C. The following is the water quality summary for this segment of the Potomac River, as taken from the D.C. 2014 Integrated Report:

Waterbody Name Potomac DC, Waterbody ID DCPMS00E_02 (Key Bridge, Georgetown, to Hains Point (Pms 10 to Pms 29), 1.38 square miles.

The overall status of this waterbody is impaired.

- The navigation use is assessed as fully supporting.
- The primary contact recreation use is assessed as not supporting due to exceedences of the *E. coli*, pH, and turbidity criteria. A fecal coliform bacteria TMDL was completed in 2004 and was revised for *E. coli* bacteria in 2014.
- The secondary contact recreation use is assessed as not supporting due to exceedences of the pH and turbidity criteria.
- The aquatic life use is assessed as not supporting due to exceedences of the pH and turbidity criteria.
- The fish consumption use is assessed as not supporting due to a public health advisory urging non-consumption of catfish, carp, and eel and limited consumption of other fish caught in all D.C. waters due to the presence of PCBs.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 -- LISTED STREAM SEGMENTS AND TMDLS							
Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<i>Impairment Information in D.C.'s 2014 Integrated Report</i>							
Potomac River	Primary Contact Recreation	<i>E. coli</i>	0.5 mile	Potomac River and Tributaries <i>E. coli</i> TMDL (D.C.) 12/31/2014	None (not expected to discharge pollutant)	---	---
		pH		---	---	---	D.C. TMDL Schedule is unknown
		Turbidity		---	---	---	
	Secondary Contact Recreation	pH		---	---	---	
		Turbidity		---	---	---	
	Aquatic Life	pH		---	---	---	
		Turbidity		---	---	---	
	Fish Consumption	PCBs		Tidal Potomac River Watershed PCBs TMDL 10/31/2007	None	---	---

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2010 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued

the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

This facility discharges to Roaches Run in the Chesapeake Bay watershed in the Potomac River. The receiving stream has been addressed in the Chesapeake Bay Total Maximum Daily Load (TMDL); addressing dissolved oxygen (DO), chlorophyll a and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for total nitrogen (TN), total phosphorus (TP) and total suspended solids (TSS) to meet applicable Virginia Water Quality Standards contained within 9VAC25-260-185.

The Chesapeake Bay TMDL implementation is currently administered in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP); approved by EPA on December 29, 2010. The approved WIP recognizes the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia*, 9VAC25-820 et seq., as governing the nutrient allocations for non-significant Chesapeake Bay dischargers. Nutrient WLAs for non-significant industrial facilities were based on estimated TN and TP load levels obtained from Discharge Monitoring Report data and typical effluent concentrations established by Standard Industrial Classification (SIC) codes. In contrast, this facility is utilizing surface water for cooling/heating purposes (i.e. what is withdrawn is discharged). There is some chemical addition to prevent corrosion within the cooling/heating system that may contain some nitrogen components. For this reason, the facility will be required to monitor nitrogen levels in the influent and effluent, concurrently to ensure that this operation is not contributing to the nutrient enrichment noted above.

See **Attachment 9** for the full planning statement.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Roaches Run, is located within Section 6 of the Potomac River Basin, and is a Class II water.

Class II tidal waters in the Chesapeake Bay and its tidal tributaries must meet dissolved oxygen (D.O.) concentrations as specified in 9VAC25-260-185 and maintain a pH of 6.0-9.0 standard units (S.U.) as specified in 9VAC25-260-50. In the Northern Virginia area, Class II waters must meet the Migratory Fish Spawning and Nursery Designated Use from February 1 through May 31. For the remainder of the year, these tidal waters must meet the Open Water use. The applicable D.O. concentrations are presented in **Attachment 10**.

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). Since the 7Q10 of the receiving stream is considered to be zero due to the tidal influence in the area, the wastewater data for hardness can be used to determine the metals criteria. The average hardness of the wastewater derived from three monitoring events conducted on May 13, 14, and 15 2015 is 121 mg/L (this value is derived from averaging the monitoring points of 136 mg/L, 118 mg/L, and 108 mg/L). The hardness-dependent metals criteria shown in **Attachment 11** are based on this hardness value of 121 mg/L.

Attachment 11 details other water quality criteria applicable to the receiving stream.

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Roaches Run, is located within Section 6 of the Potomac River Basin. This section has been designated with special standards of b and y.

Special Standard "b" (the Potomac Embayment Standards) established effluent standards for all sewage plants discharging into Potomac River embayments and for expansions of existing plants discharging into non-tidal tributaries of these embayments. 9VAC25-415, Policy for the Potomac Embayments, controls point source discharges of conventional pollutants into the Virginia embayment waters of the Potomac River and their tributaries from the fall line at Chain Bridge in Arlington County to the Route 301 Bridge in King George County. The regulation sets effluent limits for biochemical oxygen demand-5 day (BOD₅), total suspended solids (TSS), phosphorus, and ammonia to protect the water quality of these high profile waterbodies. The Potomac Embayment Standards are not applied to this industrial discharge since the discharge does not contain the pollutants of concern in appreciable amounts.

Special Standard "y" is the chronic ammonia criterion for tidal freshwater Potomac River and tributaries that enter the tidal freshwater Potomac River from Cockpit Point (below Occoquan Bay) to the fall line at Chain Bridge. During November 1 through February 14 of each year the thirty-day average concentration of total ammonia nitrogen (in mg/L) shall not exceed, more than once every three years on the average the following chronic ammonia criterion:

$$\left(\frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times 1.45(10^{0.028(25 - \text{MAX})})$$

MAX = temperature in °C or 7, whichever is greater.

MAX = temperature in °C or 7, whichever is greater.

The default design flow for calculating steady state waste load allocations for this chronic ammonia criterion is the 30Q10, unless statistically valid methods are employed which demonstrate compliance with the duration and return frequency of this water quality criterion. This standard is not applied to this discharge since it does not contain ammonia in appreciable amounts.

e. Threatened or Endangered Species

Since the 316(b) Rule is applicable to this permit, the Virginia DGIF Fish and Wildlife Information System Database was searched on September 14, 2015, for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: the Atlantic Sturgeon, the Northern Long-Eared Bat, the Brook Floater, the Wood Turtle, the Upland Sandpiper, the Loggerhead Shrike, the Grizzled Appalachian Skipper, and the Migrant Loggerhead Shrike. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge.

The stream that the facility discharges to is within a reach identified as having an Anadromous Fish Use. It is staff's best professional judgment that the proposed limits are protective of this use.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The receiving stream has been classified as Tier 1 based on the following:

- The waterbody is not actively managed as a waterfowl sanctuary.
- The waterbody is an estuary with tidal influences from the Potomac River. The tidal Potomac River is listed in D.C.'s 2014 Integrated Report as not supporting the following uses: 1) The primary contact recreation use is not supporting due to exceedances of *E. coli*, pH, and turbidity criteria; 2) The secondary contact recreation use is assessed as not supporting due to exceedances of the pH and turbidity criteria; 3) The aquatic life use is assessed as not supporting due to exceedances of the pH and turbidity criteria; and 3) The fish consumption use is assessed as not supporting due to a public health advisory urging non-consumption of catfish, carp, and eel and limited consumption of other fish caught in D.C. waters due to the presence of PCBs.
- The outfall is located in a highly urbanized area that receives storm water discharge from multiple sources.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

a. Effluent Screening:

Wastewater data obtained from Attachment A, the 2015 permit application, and the discharge monitoring reports (DMRs) has been reviewed and determined to be suitable for evaluation. **Attachment 12** details wastewater parameters that were quantifiable in a monitoring event conducted on May 12, 2015. A summary of the Total Recoverable Copper monitoring conducted from January 2011 to August 2015 and reported to DEQ on monthly DMRs is also found in **Attachment 12**.

Staff derived wasteload allocations where parameters are reasonably expected to be present in wastewater and where data indicate the pollutant is present in the discharge above quantifiable levels. **Attachment 11** details the Virginia criteria for

those pollutants having acute and chronic water quality criteria. Since the receiving stream, Roaches Run, abuts D.C. waters, the D.C. water quality criteria were also used in determination of wasteload allocation and effluent limitation development.

The Virginia and D.C. Human Health Criteria for phenols in all surface waters is 860,000 µg/L. The concentration of phenols found in wastewater monitoring from this facility, 240 µg/L, is significantly below this criteria. Therefore, there is no reasonable potential for phenols to exceed the Human Health Water Quality Standard.

The Beta Particle Activity was reported to be 0.652 pCi/L. This concentration is so low that there is no reasonable potential to exceed the Virginia Human Health Water Quality Criterion of 4 m rem/yr for surface waters. Additionally, the Gross Alpha Particle Activity reported was 0.247 pCi/L. This level of Gross Alpha Particle Activity is significantly below the Federal Safe Drinking Water Act Maximum Contaminant Level of 15 pCi/L; and thus, does not pose a pollution or human health threat.

Since dioxin was not detected during monitoring in the last 5-year permit cycle, monitoring for dioxin shall be removed from this permit. Detected parameters in the wastewater monitoring having acute and chronic criteria are copper and nickel. Virginia and D.C. Acute and Chronic Water Quality Criteria for Copper and Nickel are summarized in Table 5 below.

TABLE 5 – HARDNESS-BASED METALS CRITERIA				
Parameter	VA Acute Criterion	D.C. Acute Criterion	VA Chronic Criterion	D.C. Chronic Criterion
Copper	16	16	11	11
Nickel	210	542	24	60

- 1) **Acute WLA:** - DEQ-Guidance Memorandum 00-2011 states that for surface discharges into tidal estuaries or estuarine embayments, the acute wasteload allocation (WLAa) should be set at 2 times the acute criteria because initial mixing in these circumstances is limited and lethality in the allocated impact zone must be prevented. The 2X factor is derived from the fact that the acute standard (or Criteria Maximum Concentration - CMC) is defined as one half of the final acute value (FAV) for a specific toxic pollutant. The term final acute value is defined as an estimate of the concentration of the toxicant corresponding to a cumulative probability of 0.05 for the acute toxicity values for all genera for which acceptable acute test have been conducted with the toxicant. Therefore, if the acute value is one half the FAV, then 2 times the acute standard should equal the FAV or equal an acceptable value for preventing lethality.
- 2) **Chronic WLA:** - DEQ-Guidance Memorandum 00-2011 states that for surface discharges into tidal estuaries, estuarine embayments, or the open ocean, the chronic wasteload allocation (WLAc) should be based upon site specific data on waste dispersion or dilution when available and appropriate. Where wastewater dispersion/dilution data are not available, a dilution ration of 50:1 may be used. While staff acknowledges that some dilution is occurring in the river, it is not appropriate to use the 50:1 dilution ratio because the Pentagon Reservation is discharging a large volume of wastewater (approximately 130 MGD Maximum) and there are other municipal discharges in the area that greatly influence the mixing zone. Therefore, large tidal influences may not be realized.

Recognizing that 50:1 is too high, and 1:1 is most likely too stringent (end of pipe) because some mixing is occurring, staff has chosen to use a ratio of 2:1 until more evidence becomes available that demonstrates a more appropriate dilution ratio.

As stated in Section 17.a of this Fact Sheet, copper and nickel are present in this discharge. Based upon comparison of Virginia and D.C. water quality criteria, the most stringent acute and chronic WLAs for these parameters based upon the calculation of 2X the acute and chronic criteria are presented in Table 6 below:

TABLE 6 – METALS WLAS		
Parameter	Acute WLAs	Chronic WLAs
Copper	32	22
Nickel	420	48

The WLA values are then compared with available effluent data to determine the need for discharge limitations. Wastewater limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data. Effluent limitations for metals are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation.

b. Effluent Limitations Toxic Pollutants -- Outfalls 001 and 002:

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

Due to the discharge to a receiving stream boundary between two jurisdictions, both D.C. and Virginia Water Quality Criteria were reviewed to determine the more stringent Water Quality Criteria. It was determined that Virginia and D.C. Water Quality Criteria for copper were the same and the Virginia Water Quality Criteria for nickel was more stringent. Hence, WLAs and effluent limits were calculated for copper and nickel using the Virginia Water Quality Standards.

It was determined that a limit for nickel was not needed. However, a monthly average and monthly maximum limit of 32 µg/L is needed for copper; this replaces the current limit as 34 µg/L (see **Attachment 13**).

c. Effluent Limitations and Monitoring (Outfalls 001 and 002) – Conventional and Non-Conventional Pollutants:

No changes to temperature and pH limitations are proposed. Since temperature is a major pollutant of concern in this discharge, the temperature criterion for Class II nontidal water, a maximum of 32°C has been applied, although this discharge is to a freshwater tidal area. In addition, the criteria limiting increase in the natural rise in temperature to 3°C has been applied in this permit. The permittee shall adhere to an approved Instream Monitoring Plan.

d. Effluent Annual Average Monitoring –Nutrients:

The anticorrosion agent used to mitigate the concentration of Total Recoverable Copper in the discharge is Mexel 432/0. The manufacturer's representative states that the product contains approximately 2% nitrogen and will discharge less than 140 pounds of nitrogen per year at the current flow rates. Due to the input of nitrogen in the discharge originating from Mexel 432/0, monthly monitoring for Total Nitrogen (TN) was required in the last permit cycle.

That last permit reissuance stated that if the load of TN discharged per year exceeds 2,300 pounds (equivalent to a sewage treatment plant with a design flow of 40,000 gpd), the Pentagon must apply for a registration statement per 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. In lieu of obtaining a Nutrient General Permit, the Pentagon elected to conduct a TN Study during the last permit cycle. That study showed that the net TN loading to Roaches Run from the Pentagon was less than 2,300 pounds in a calendar year. In fact, there was a net nitrogen loss of 10402.73 pounds for the 2014 period shown in **Attachment 14**.

Purchases of Mexel 432/0 by the Pentagon in 2013, 2014, and 2015 were 2000 liters, 1000 liters, and 1000 liters, respectively. The volume in mass of nitrogen in the product sold to the Pentagon in 2013, 2014, and 2015 was 66 pounds, 33 pounds, and 33 pounds, respectively.

The Pentagon Reservation proposes to conduct concurrent composite monitoring of TN at the intake and outfall quarterly for a period of one year as detailed in **Attachment 15**. If it is determined that the net discharge of TN to the receiving stream does not adversely affect the water shed TN loading, monitoring of TN can cease for the remainder of the permit cycle.

e. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the table found in Section 19 of this fact sheet. Limits were established for pH, temperature, and Total Recoverable Copper. Monitoring is required for influent and effluent nitrate/nitrite as nitrogen, influent and effluent Total Kjeldahl Nitrogen (TKN), influent and effluent TN, hardness, and chronic toxicity. The limits for pH are based on D.C. Water Quality Standards. The limits for Total Recoverable Copper are based on D.C. and Virginia Water Quality Standards (the criteria for this parameter in both jurisdictions is the same), and the limit for temperature is based on best professional judgment.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Maximum Flow of this Industrial Facility is 130 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Effluent Flow (MGD)	NA	NL	NA	NA	NL	1/D	TIRE
pH (S.U.)	1	NA	NA	6.0	8.5	1/D	Grab
Temperature (C) ^a	2	NA	NA	NA	32°	2/D	IS
Copper, Total Recoverable (µg/L)	1, 3	32	NA	NA	32	1/M	Grab
Total Hardness (mg/L)	2	NA	NA	NA	NL	1/M	Grab
Effluent Nitrate+Nitrite, as N (mg/L)	2	NL	NA	NA	NA	1/3M ^b	24H-C
Effluent TKN (mg/L)	2	NL	NA	NA	NA	1/3M ^b	24H-C
Effluent Total Nitrogen ^c (mg/L)	2	NL	NA	NA	NA	1/3M ^b	Calculated
Effluent Total Nitrogen ^{d, e} (lbs./year to date)	2	NA	NA	NA	NL	1/3M ^b	Calculated
Effluent Total Nitrogen ^{d, e} (lbs./calendar year)	2	NA	NA	NA	NL	1/Y	Calculated
Influent Nitrate+Nitrite, as N (mg/L)	2	NL	NA	NA	NA	1/3M ^b	24H-C
Influent TKN (mg/L)	2	NL	NA	NA	NA	1/3M ^b	24H-C
Influent Total Nitrogen ^c (mg/L)	2	NL	NA	NA	NA	1/3M ^b	Calculated
Influent Total Nitrogen ^{d, e} (lbs. year to date)	2	NA	NA	NA	NL	1/3M ^b	Calculated
Influent Total Nitrogen ^{d, e} (lbs./calendar year)	2	NA	NA	NA	NL	1/Y	Calculated
Chronic 3-Brood Static Renewal (<i>C. dubia</i>) (TU _c)	NA	NA	NA	NA	NL	See Permit Part I.C	24H-C
Chronic 7-Day Static Renewal (<i>P. promelas</i>) (TU _c)	NA	NA	NA	NA	NL	See Permit Part I.C	24H-C

The basis for the limitations codes are:

1. D.C. Water Quality Standards
2. Best Professional Judgment
3. Virginia Water Quality Standards

NL = No limit; monitor and report.

NA = Not applicable.

TIRE = Totalizing, indicating and recording equipment.

MGD = Million gallons per day.

S.U. = Standard units.

C = Celsius.

IS = Immersion stabilization.

TU_c = Toxic Units.

1/D = Once every day.

2/D = Two times each day.

1/M = Once every month.

1/3M = Once every quarter.

1/Y = Once per year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

24H-C = A composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

- a. The maximum temperature of the discharge from Outfalls 001 and 002 shall not exceed 32°C unless instream monitoring conducted in accordance with the approved Instream Monitoring Plan shows the rise in temperature does not exceed 3°C
- b. Quarterly sampling periods are Jan – Mar, Apr – Jun, Jul – Aug, and Oct – Dec. Monitoring results are due each Jan 10, Apr 10, Jul 10, and Oct 10.
- c. Total Nitrogen = Sum of TKN plus Nitrate and Nitrite.
- d. Nitrogen loading shall be calculated as follows: Maximum 30-day total nitrogen (mg/L) x 8.345 x maximum 30-day flow average.
- e. See Part I.B.3 of the permit for nutrient reporting calculations.

20. Other Permit Requirements:

- a. Part I.B. of the permit contains quantification levels and compliance reporting instructions. 9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

Although this facility will be monitoring on a quarterly in lieu of monthly basis, the calculations for TN shall be consistent with the methodology as set forth in 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70.

- b. Permit Section Part I.C., details the requirements for Whole Effluent Toxicity (WET) Program. Whole Effluent Toxicity refers to the aggregate toxic effect to aquatic organisms from all pollutants present within a facility's wastewater effluent. This program is one approach to comply with the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. WET testing allows for the measurement of the wastewater's potential effects on specific test organism's ability to survive, grow and reproduce.

The VPDES Permit Regulation at 9VAC25-31-220.D.1.a-d. requires limitations in permits to provide for and ensure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. Limitations must control all pollutants or pollutant parameters which the Board determines are or may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any Virginia water quality standard, including narrative criteria. The determination whether a discharge causes or contributes to an instream excursion above a narrative or numeric criteria shall utilize procedures which account for existing controls on sources of pollution, variability of the pollutant, species sensitivity and dilution of the effluent in the receiving stream. If it is determined that a reasonable potential exists to cause or contribute to an instream excursion of narrative criterion of the water quality standard, the permit must contain effluent limits for whole effluent toxicity. However, limits may not be necessary when it is demonstrated that chemical-specific limits are sufficient to attain and maintain applicable numeric and narrative water quality standards.

A WET Program is imposed for industrial facilities based on the facility's Standard Industrial Classification (SIC) code, instream waste concentration (IWC) and/or those required by the Board based on effluent variability, compliance history, existing treatment processes and/or the receiving stream characteristics. This facility is a candidate for the WET program based on its' SIC code, the IWC, and the receiving stream characteristics in comparison to the volume of this discharge.

As referenced above, reasonable potential determinations must take into account the variability of the pollutant or pollutant parameter in the effluent, sensitivity of the species to toxicity testing and, as appropriate, the dilution of the effluent in the receiving stream. This warrants a sampling regime that rotates throughout a given calendar year; a quarterly schedule in order to obtain seasonal perspectives that encompass that potential variability listed prior. This methodology coincides with the VPDES Permit Regulation requirements that facilities submit representative data that reflects the seasonal variation in the discharge with each permit application (9VAC25-31-100.K.4.g.). Therefore, it is staff's best professional judgment that a WET testing protocol be proposed with this permit action that requires a rotating, quarterly testing regime for each annual monitoring requirement. The schedule as set forth within Part I.C. of the permit will ensure that the discharge is monitored for whole effluent toxicity and demonstrates seasonal variations.

21. Other Special Conditions:

- a. Operations and Maintenance (O&M) Manual Requirement. Required by the Code of Virginia at §62.1-44.19; the VPDES Permit Regulation at 9VAC25-31-190.E, and 40 CFR 122.41(e). The permittee shall maintain a current O&M Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- b. Notification Levels. Required by VPDES Permit Regulation at 9VAC-31-200A for all manufacturing, commercial, mining, and silvicultural discharges. The permittee shall notify the Department as soon as they know or have reason to believe:
- 1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any

toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

- a) One hundred micrograms per liter;
 - b) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;
 - c) Five times the maximum concentration value reported for that pollutant in the permit application; or
 - d) The level established by the Board.
- 2) That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
- a) Five hundred micrograms per liter;
 - b) One milligram per liter for antimony;
 - c) Ten times the maximum concentration value reported for that pollutant in the permit application; or
 - d) The level established by the Board.
- c. Materials Handling/Storage. 9VAC25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. The Code of Virginia at §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.
- d. Discharges from Outfall 001. Outfall 001 is owned by Arlington County and is used for storm water discharge under the Arlington County MS-4 permit. The permittee shall only discharge from Outfall 001 during periods of maintenance and emergencies. It is anticipated that these events will only occur once per year but may occur more frequently. The permittee shall notify DEQ-NRO and Arlington County at least seven days in advance of scheduled maintenance, and within 24 hours of emergency events. The contact for Arlington County is the Department of Environmental Services—Environmental Planning Office. Discharges during these events shall be monitored and limited for those parameters in Part I.A.
- e. Non-Contact Cooling Water Additives. The permittee shall notify DEQ-NRO in writing at least 30 days before changing chemical additives in the non-contact cooling water. Should the use of chemical additives significantly alter the characteristics of the non-contact cooling water discharge, this permit may be modified or alternatively revoked and reissued to include appropriate limitations or conditions.
- f. Water Quality Criteria Monitoring. State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit. The results of this analysis must be submitted to DEQ-NRO with the permit application, which is due 180 days prior to the expiration date of the VPDES permit.
- g. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit or routine effluent monitoring, indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

- h. Temperature/Instream Monitoring. Exceedence of the maximum temperature at the point of compliance prior to discharge from either Outfall 001 or Outfall 002 shall not exceed 32°C unless instream monitoring, conducted in accordance with the approved Instream Monitoring Plan on file, shows the rise in natural temperature between the intake and the discharge location does not exceed 3°C per 9VAC25-260 and Part I.A of this permit. Instream monitoring shall be conducted in accordance with the approved Instream Monitoring Plan from April 1 to September 30 to assess the effect of temperature change on the receiving stream. Instream Monitoring may be conducted the remainder of the year to determine compliance with the 32°C temperature requirement if necessary.
- i. Nutrient Monitoring. Due to the input of nitrogen in the discharge originating from Mexel 432/0, monthly monitoring for Total Nitrogen (TN) was required in the last permit cycle. The Pentagon elected to conduct a TN Study during the last permit cycle. That study showed that the net TN loading to Roaches Run from the Pentagon was less than 2,300 pounds in a calendar year.

Concurrent quarterly composite monitoring of TN at the intake and outfall for a period of one year as detailed in **Attachment 15** shall be conducted. If it is determined that the net discharge of TN to the receiving stream does not adversely affect the watershed TN loading, monitoring of TN can cease for the remainder of the permit cycle.

- j. PCB Monitoring. This special condition requires the permittee to conduct PCB monitoring using ultra-low level PCB analysis during two seasons (December 1 – February 23 and June 1 – August 31).
- k. Interim §316(b) Best Technology Available (BTA)
VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, professional judgment basis. DEQ staff have determined the permitted facility to be subject to the §316(b) requirements because it is a point source that uses or proposes to use one or more cooling water intake structures that withdraws waters of the U.S. for cooling purposes.

Federal regulations at 40 CFR §§125.98(b)(5) and (b)(6) mandate that for permits issued before July 14, 2018, for which an alternate schedule has been established for the submission of information required by 40 CFR §122.21(r), must include interim BTA requirements in the permit based on professional judgment on a site-specific basis. This special condition outlines interim BTA practices to minimize impingement and entrainment (I&E) mortality and adverse impacts to aquatic organisms. The interim BTA measures to be used at this facility throughout the term of this permit are described in the paragraph below.

The Pentagon Reservation currently has eight (8) chillers used in the production of chilled water for air conditioning (see Section 10 of this fact sheet for a description of the operation). The system is designed to operate seven (7) to eight (8) chillers during June through August of each year (the peak period) with a maximum flow of 113 to 130 MGD and an intake velocity of 3.48 to 4.0 fps. During the remainder of the year, the number of pumps in use, flow, and intake velocity are decreased (see **Attachment 3**). Winter months are considered to the non-peak periods. When less chillers are used, the intake velocity decreases and hence, entrainment of fish species will likely be mitigated.

The traveling screens have an operating speed of 0.167 fps; the operating speed of the trash rakes is 0.2 fps. When both the ten minute minimum runtime expires and the differential level across the screens falls below two (2) inches, the screen drive motor automatically ceases to operate. The motor will continue to run until both conditions exists. This measure will reduce the volume of intake water pulled through the screen and hence, likely reduce entrapment and entrainment rates.

The troughs at the intake screen do not contain sufficient water to sustain aquatic life. However, since the trash rakes are run manually, the contents captured on the troughs are immediately emptied after each run. Debris collected in the troughs will be placed into a 30-gallon trash bin, and live aquatic organisms will be released from the troughs into the Boundary Channel Lagoon in accordance with the internal fish handling and release guidelines after each run at the intake structures. . The facility will consider installation of barrier nets to keep the fish away from the intake and installation of a fish return system at the intake. Emptying the troughs will reduce fish entrapment and entrainment in the interim. Installation of more automatic measures such as barrier nets and an automatic fish return system will increase the efficiency of the operation and hence, likely improve fish survival rates. Internal interim procedures to be followed by the Pentagon to reduce fish mortality and prevent stress while handling aquatic life include the following:

- 1) A small plastic holding tank full of fresh river water shall be kept at the intake structures and used to hold and transfer captured fish. Frequent fresh river water exchanges shall be performed at each run;
- 2) Safe handling to include proper body support of the fish and techniques that prevent injury, such as using wet hands (bare or gloved) and not holding fish by the eyes, jaws, or gills shall be utilized;

- 3) The amount of time fish are out of the water shall be minimized;
- 4) When releasing fish back to the Boundary Channel Lagoon, operators shall consider whether the fish need to acclimate to the release water if the temperatures vary greatly between the holding tank and the release water; and
- 5) Operators shall avoid throwing fish into the holding tank or at release back into the river.

l. Impingement and Entrainment Control Technology Preventative Maintenance

VPDES Permit Regulation 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.

m. Alternate Schedule for Submittal of 40 CFR §122.21(r) Information:

VPDES Permit Regulation 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet the requirements under §316(b) of the Clean Water Act (CWA) determined by the department on a case-by-case, best professional judgment (BPJ) basis. Federal regulations at 40 CFR §125.95(a)(2) allow for owners or operators of a facility whose permit expires prior to July 14, 2018 to request the Director establish an alternate schedule for the submission of the information required in 40 CFR §122.21(r) when making application for this permit. If the owner or operator of the facility demonstrates that it could not develop the required information by the applicable date of submission, DEQ must establish an alternate schedule for the submission of the required information.

DEQ staff received a written request from the permittee, dated June 30, 2015, requesting an alternate schedule (see **Attachment 16**). Upon review of the request, DEQ staff determined the permittee successfully demonstrated the inability to reasonably develop the required information by their reissuance application due date, thereby qualifying for an alternate schedule to be established.

Federal regulations at 40 CFR §125.98(a) requires the review, for completeness, of the materials submitted by the applicant under 40 CFR §122.21(r) at the time of any application for a subsequent permit. To facilitate a determination of a timely and complete reissuance application in compliance with Part II.M of this permit, the Alternate Schedule for this facility has been established to require submission of the 40 CFR §122.21(r) information to the DEQ-Regional Office by no later than 270 days prior to the expiration date of this permit.

n. Visual or Remote Inspections

The VPDES Permit Regulation at 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. Federal regulations at 40 CFR §125.96(e) requires visual inspections or the employment of remote monitoring devices to be conducted at least weekly during the period any cooling water intake structure is in operation to ensure any technologies operated are maintained and operated to function as designed, including those installed to protect Federally-listed threatened or endangered species or designated critical habitat.

40 CFR §125.96 authorizes DEQ to establish monitoring requirements, and specific protocols, as appropriate. Provisions for inspection waivers, adverse weather conditions, and deficiency discoveries were developed, using as a foundation, comparable provisions found in the VPDES General Permit for Stormwater Discharges Associated with Industrial Activity, 9 VAC 25-151-70, Part I.A.2.e, A.3 and A.6.b.

o. Annual Certification Statement Requirements

The VPDES Permit Regulation at 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. The Federal regulations at 40 CFR §125.97(c) requires the permittee to annually submit a certification statement signed by a responsible corporate officer reporting whether there have been substantial modifications to the operation at any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structures, or if information contained in the previous year's annual certification remains pertinent.

p. Measures to protect Federally-listed Threatened or Endangered (T&E) species, designated critical habitat, and fragile species or shellfish

The VPDES Permit Regulation at 9VAC25-31-330 authorizes the board to include conditions in the permit in response to advice submitted in writing to the DEQ from the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, or any other state or federal agency with jurisdiction over fish, wildlife, or public health that the imposition of specified conditions are necessary to avoid substantial impairment of fish, shellfish, or wildlife resources and to the extent the board determines the conditions are necessary to carry out the provisions of the regulation, the law and of the CWA.

In addition, the VPDES Permit Regulation at 9VAC25-31-165.C requires existing facilities with cooling water intake structures to meet requirements under section 316(b) of the Clean Water Act determined by the department on a case-by-case, best professional judgment (BPJ) basis. 40 CFR §§125.94(a)(1), 125.94(g), 125.96(g), and 125.97(g) authorize DEQ to establish additional control measures, monitoring, and reporting requirements in the permit designed to minimize incidental take, reduce or remove more than minor detrimental effects to Federally-listed threatened or endangered species or designated critical habitat, or avoid jeopardizing Federally-listed species or destroying or adversely modifying designated critical habitat (e.g. prey base).

The State Water Control Law at §62.1-44.5.A.3 and the VPDES Permit Regulation at 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board. In addition, the VPDES Permit Regulation at 9VAC25-31-190.E requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.

The State Water Control Law at §62.1-44.21 and the VPDES Permit Regulation at 9VAC25-31-190.H authorizes the Board to require owners to furnish plans, specifications, and other pertinent information as may be necessary to accomplish the purposes of the State Water Control Law. In addition, the Federal regulations at 40 CFR §125.94(g) and §125.97(e) authorize DEQ to establish additional permit monitoring and reporting requirements. Information provided by the permittee under this special condition may be used as a foundation to address other reporting requirements of 40 CFR §125.98(k).

q. Federal Endangered Species Act Compliance

The State Water Control Law at §62.1-44.5.A.3 and the VPDES Permit Regulation at 9VAC25-31-50.A.2 prohibits the alteration of the physical, chemical or biological properties of State waters and making them detrimental to animal or aquatic life, except in compliance with a permit issued by the Board.

In addition, the VPDES Permit Regulation at 9VAC25-31-210.A authorizes the Board to establish permit conditions to provide for and assure compliance with all applicable requirements of the law, the CWA and regulations. 40 CFR §125.98(j) stipulates that nothing in Subpart J of Part 125 of the Code of Federal Regulations authorizes the take, as defined at 16 U.S.C. 1532(19), of threatened or endangered species of fish or wildlife. Such take is prohibited under the Endangered Species Act unless it is exempted pursuant to 16 U.S.C 1536(o) or permitted pursuant to 16 U.S.C 1539(a). Absent such exemption or permit, any facility must not take threatened or endangered species. 40 CFR §125.98(b)(1) requires all NPDES permits for facilities subject to §316(b) of the Clean Water Act to include as a permit condition the specific language of this special condition.

- r. TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II. Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. **Changes to the Permit from the Previously Issued Permit:**

a. Special Conditions:

- 1) §316(b) requirements and special conditions have been added in accordance with 40 CFR §122.21(r).
- 2) A Nutrient Monitoring Special Condition has been added.
- 3) The Nutrient Reopener Special Condition has been removed.
- 4) The Water Quality Criteria Special Condition has been added.
- 5) The Water Quality Monitoring Special Condition has been added.
- 6) The Instream Monitoring Special Condition has been modified to require monitoring only during April 1 through September 30 of each year.
- 8) The requirement for increased monitoring when discharge occurs from Outfall 001 has been removed.
- 9) The PCB monitoring condition has been added.

b. Monitoring and Effluent Limitations/Other:

- 1) The flow monitoring frequency has been changed from monthly to daily.
- 2) Since dioxin was not detected during monitoring in the last 5-year permit cycle, monitoring for dioxin shall be removed from this permit.
- 3) Influent monitoring for Nitrate-Nitrite as N, TKN, and TN has been added to this permit. The monitoring frequency for TN has been changed from monthly to quarterly. A stipulation has been added to allow monitoring to cease after one year if it is shown that the net discharge of TN to the receiving stream does not adversely affect the water shed TN loading
- 4) The Total Recoverable Copper limit has been re-evaluated and has been changed from 34 µg/L to 32 µg/L.
- 5) A monthly hardness monitoring requirement shall be added to this permit.
- 6) The Industrial Rating Score has changed from 69.5 to 68.

24. Variances/Alternate Limits or Conditions: None**25. Public Notice Information:**

First Public Notice Date: 6/13/2016

Second Public Notice Date: 6/20/2016

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193 at 703-583-3837 or anna.westernik@deq.virginia.gov. See **Attachment 17** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:a. Previous Board Action(s):

- 1) The Department of Defense was issued a Consent Order on March 17, 2006 that was terminated on April 4, 2007. The purpose of the Consent Order was to ensure that strategies were implemented for the control of Total Recoverable Copper in the discharge.
- 2) There is an open enforcement action with the Pentagon at this time.

- b. Staff Comments: Due to the requirements of this facility to meet the requirements under §316(b) of the CWA, DEQ-NRO sent a copy of the 2015 permit application to Brett Hillman at the U.S. Fish and Wildlife Service on September 14, 2015. Additionally, due to the presence of the Federally endangered Atlantic Sturgeon in the receiving stream, Ms. Christine Vaccaro of the National Oceanic and Atmospheric Administration (NOAA) was also sent a copy of the 2015 permit application for review on September 14, 2015.

On October 25, 2015, the U.S. Fish and Wildlife Service responded with the following: "We request the opportunity to comment once we have had time to review those materials. In particular, we request the opportunity to review any studies that quantify or estimate entrainment or impingement rates." Christine Vaccaro of NOAA responded on January 21, 2016 with the following: "We have no objections to this facility using the alternate schedule clause. When the time comes that we are entering the permit renewal (after this alternate schedule), we can begin our official 316(b) review with you." See **Attachment 18** for full comments.

- c. Public Comment: No public comments were received during the comment period.

Attachments to Fact Sheet for VPDES Permit No. VA0032000

Attachment 1	Flow Frequency Determination
Attachment 2	MSDS Sheet for Mexel 432/0
Attachment 3	Pump Operational Details
Attachment 4	NPDES Permit Rating Worksheet
Attachment 5	Facility Schematic/Diagram
Attachment 6	Topographic Map 204D (Alexandria)
Attachment 7	Pentagon Reservation Chemical Inventory
Attachment 8	DEQ Inspection Report Dated May 27, 2015
Attachment 9	October 2015 Planning Statement
Attachment 10	Applicable Dissolved Oxygen Concentrations
Attachment 11	Water Quality Criteria and Wasteload Allocations
Attachment 12	Quantifiable Wastewater Parameters
Attachment 13	Derivation of Limits Based Upon Water Quality Standards
Attachment 14	2014 Total Nitrogen Discharge Summary
Attachment 15	Pentagon TN Monitoring Summary and Plan
Attachment 16	Clean Water Act §316(b) Alternate Schedule Request
Attachment 17	Public Notice
Attachment 18	October 2015 Application Review Response from the U.S. Fish and Wildlife Service and January 2016 Application Review Response from NOAA

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Water Quality Assessments

629 East Main Street P.O. Box 10009 Richmond, Virginia 23219

SUBJECT: Flow Frequency Determination
Pentagon Reservation, D.O.D. - #VA0032000

TO: Anna Tuthill, NRO

FROM: Paul E. Herman, P.E., WQAP *Paul*

DATE: May 20, 1999

COPIES: Ron Gregory, Charles Martin, File

RECEIVED
MAY 21 1999

Northern VA. Region
Dept. of Env. Quality

The Pentagon Reservation discharges to the Roaches Run Waterfowl Sanctuary in Arlington, Virginia. Flow frequencies are required at this site for use by the permit writer in developing the VPDES permit.

The flow frequencies for the discharge receiving stream were determined by inspection of the USGS Alexandria Quadrangle topographic map. The map depicts the Waterfowl Sanctuary as a tidal basin. There are no free flowing freshwater tributaries to the Waterfowl Sanctuary. The flow frequencies for tidal water bodies are not determinable. Dilution ratios should be used to assess the impact the discharge from the subject facility has on the receiving waters.

If you have any questions concerning this analysis, please let me know.

Safety Data Sheet

Product : **Mexel® 432/0** Page : 1/7
 Date : **December 20th, 2006** Version : 5.50 Cancel and replace version 5.00

1 – Identification of the Preparation and of the Company

Identification of the preparation:

Product name: **Mexel® 432/0**
 Use of the preparation: **Anticorrosion dispersant, for industrial waters.**
 Usual dosage: **5 to 7 ppm 15 to 60 min. / day.***

Compagny identification:

Manufacturer: **MEXEL® S.A.**
 Address: **Route de Compiègne**
F-60410 Verberie – France.
 Telephone number: **33 (0)3 44 38 39 40.**
 Fax number: **33 (0)3 44 38 39 49.**
 Emergency telephone number: **CHEMTREC 800-424-9300 (company code - J954)**

2 – Composition / Information on Ingredients

Preparation:

Chemical nature: **Aqueous emulsion of aliphatic amines.**

Hazardous ingredients:

Substance	CAS N°	EC N°	EC classification	% w/w
Aliphatic amine 1			C,N ; R22-35-50	10-15 %
Aliphatic amine 2			C,N ; R22-35-50	< 2 %
Aliphatic amine 3			Xn,,N ; R22-38-41-50/53	< 5 %
2-amino-2-méthylpropanol	124-68-5	204-709-8	Xi ; R36/38-52/53	< 5 %

Complementary data: **Dry extract approximately 15 %.**
Mexel® is a registered trademark.

3 – Hazards Identification

Classification of the preparation: According to criteria's of appendix VI of the modified 67/548/EEC directive, this product is classified as:
IRRITANT.
DANGEROUS FOR THE ENVIRONMENT

Principal hazards:

Harmful effects on health: **Irritant to eyes. Risk of serious damage to eyes.**
Taking into account the physical and chemical properties of the product, harmful effects are possible by contact of the liquid with the skin and/or by ingestion.
 Effects on the environment: **Very toxic to aquatic organisms.**
 Physical and chemical hazard: **No particular hazard of fire or explosion.**

4 – First Aid Measures

Inhalation: **Not likely occur. Remove the subject from the contaminated area and supply fresh air.**
Skin contact: **Immediately remove contaminated clothing and shoes.**
Rinse immediately and abundantly with water for at least 15 minutes.
In case of important contact: consult a doctor if required.
Eye contact: **Immediately flush eyes with large amounts of running water for at least 15 minutes, holding eyelids open.**

Safety Data Sheet

Product :	Mexel®432/0	Page : 2/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00
Ingestion:	In all the cases, consult an ophthalmologist, even in the absence of apparent damage. Do not induce vomiting. Seek medical advice immediately and show this container or label.	

5 – Fire-Fighting Measures

Extinguishing media:

Suitable:

Foam, Dry chemical, Carbon dioxide (CO2).

Unsuitable:

None, to our knowledge. In case of fire in the vicinity, use the adapted extinguishing media.

Special exposure hazard in fire:

In the event of discharge, the product can cause extremely slipping conditions.

Required special equipment for firefighters:

Self contained breathing apparatus.

For more information, refer to section 8: " Exposure controls - Personal protection ".

Special procedures:

Do not breathe fumes. Evacuate the personnel away from fumes into a well ventilated area.

Use water spray to cool fire-exposed containers.

Hazardous decomposition products: Possible formation of carbon monoxide, nitrogen oxides and dangerous organic compounds.

6 – Accidental Release Measures

Personal precautions:

Avoid contact with skin and eyes.

Do not breath vapors.

Wear appropriate protective clothing, gloves and chemical safety goggles.

For more information, refer to section 8: " Exposure controls - Personal protection ".

Environmental precautions:

Do not flush to sewer and rivers Product dangerous for the environment).

Stop the leak. Place damaged packing (leak on top) to stop the flow.

Recover the product as soon as possible. In case of important spillage, embank to contain the spilled liquid.

Methods for cleaning:**Recovery:**

Recover the maximum of the product.

Pump the product in a salvage container suitably labeled and equipped with a closing.

Then transport the salvage containers in a reserved place, for later recycling or elimination.

Neutralization:

Absorb the nonrecoverable liquid onto an inert medium e.g. sawdust, sand, gravel sand, earth or diatomaceous earth.

Cleaning/decontamination:

Wash the nonrecoverable remainder with plenty of water.

Disposal:

Do not empty into drains.

For waste disposal, refer to section 13: " Disposal considerations ".

Safety Data Sheet

Product :	Mexel® 432/0	Page : 3/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00

7 – Handling and Storage

Handling

Technical measures: Use only materials resistant to alkalis and caustics.
Provide eyewash stations and safety showers in the vicinity.

Personal protection: Wear protective clothing, impermeable gloves and eye/face protective equipment (for exemple a visor).

Precautions to be taken: Avoid any direct contact with the product.
Avoid environmental contamination.
Work in a well-ventilated area.
When using do not eat, drink or smoke.

Other cautions: Handle in accordance with the general rules of industrial safety.
Use as directed in instructions.
Handle and open the container with care.
Avoid any spillage onto the floor.
Do not mix with incompatible materials (see list in section 10).

Storage

Technical measures: Make all necessary arrangements to avoid release into sewers and rivers, in case of rupture of the containers or the systems of transfer.
Storage and application surface areas must be impermeable and, if possible, constructed with an appropriate retention wall.

Storage conditions:

Recommended: Store the product at a temperature below 60°C and protected from freezing.

Incompatible matters: See detailed list of the incompatible matters, in section 10 : "Stability - reactivity".

Packing conditions : Packing equipped with a closure.
Drums, Polyethylene container with metal framework or standard stainless steel cistern-container.

Packing materials :

Recommended : Standard stainless steel 304 or 316, ordinary steel.

Not recommended : Aluminium, Copper, Zinc and there alloys.
Materials not resistant to strong bases.
Certain plastics.
Elastomers.

8 – Exposure Controls / Personal Protection

Exposure limit values: No specific limit of occupational exposure was established.

Exposure controls:

Technical measures: Safety shower.
Eyewash fountain.
Local aspiration in the event of mist, natural ventilation is sufficient in the absence of mist.

Occupational exposure controls

Respiratory protection: If ventilation is adequate, a breathing apparatus may not be required.
In case of vapour realese, use approved respiratory protection equipment.

Hand protection: Use protective gloves of PVC.

Eye protection: Chemical goggles or faceshield.

Skin protection: Use suitable protective clothing as protection against splashing or contamination, PVC boots.

Safety Data Sheet

Product :	Mexel® 432/0	Page : 4/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00
Environmental exposure controls:	Do not flush to sewer and rivers.	
Hygiene practice:	When using do not eat, drink or smoke. Do not allow the product to dry on the skin. Wash hands thoroughly after handling. Separate work clothing from street clothing, wash immediately with plenty of water any soiled clothing.	

9 – Physical and Chemical Properties

Appearance:	Thick and viscous liquid at 20°C.
Physical state :	Pale yellow to off-white.
Color:	Amino.
Odour:	11.5.
pH:	
Temperature characteristics:	
Freezing point:	≈ -2°C.
Boiling point:	100°C.
Flashpoint:	> 100°C (NFT 60-103).
Other data:	
Danger of explosion:	Product does not present an explosion hazard.
Oxidizing properties:	Not oxidizing according to EEC criteria.
Density:	≈ 985 kg/m ³ en dilution aqueuse à 50% en poids, à 20°C. ≈ 984 kg/m ³ en dilution aqueuse à 50% en poids, à 25°C.
Solubility in water:	Dispersible.
Solubility in organic solvents:	Soluble in isopropanol, insoluble in chloroform.

10 – Stability and Reactivity

Stability:	Stable under normal temperatures, pressures and normal use conditions.
Materials to avoid:	Strong acids, powerful oxidants, halogenous compounds and water incompatible matters.
Hazardous decomposition products:	Thermal decomposition produces COx and NOx.
Hazardous reactions:	No hazardous reaction is known under the normal operating conditions. Refer to the technical note.

11 – Toxicological Information

Acute toxicity:	
Cutaneous:	LD50 cutaneous (Rat) : > 2 000 mg/kg. (pure product, not published).
Ingestion:	LD50 oral (Rat) : > 2 000 mg/kg. (pure product, not published).
Health effects:	
Cutaneous	Not irritant (Rat, pure product). Repeated or prolonged contact might cause a slight irritation of the skin (bibliographical data). Can cause an irritation of the skin of the sensitive people. Slightly irritant (rabbit).
Eye:	Severely irritating to eyes. Risk of serious damage to eyes (not published).
Mucous membranes:	May cause a perforation of the esophagus and digestive tract.

Safety Data Sheet

Product :	Mixel® 432/0	Page : 5/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00

Other information:

Mutagen effects: Not mutagen in the Ames's test with and without metabolic activation.
Not mutagen in the human lymphocytes test with and without metabolic activation.

Oestrogénomimetic effects : Not oestrogénomimetic *in vitro* human cell line for concentrations between 0,1 and 1 mgL⁻¹.

12 – Ecological Information

Mobility: Not very soluble. Forms a film by adsorption on particles or suspended matters.

Target destination of the product : Ultimate target destination of the product : Soil and sediments.

Degradability:

Primary aerobic biodegradation : 19 to 98 % after 11 days according to the stock used.

Ecotoxicity:

Effects on aquatic organisms after continuous exposures:

Very toxic totested aquatic organisms.
EC50 (*Daphnia magna*) / 48 h : 0,554 mg/l.
EC50 (*Photobacterium phosphoreum*) / 15 min. : 4,9 mg/l.
LC50 (Fish : *Brachydanio rerio*) / 24 h : 1,3 mg/l.
LC50 (Fish : *Pleuronectes platessa*) / 96 h : 0,83 mg/l.
LC50 (Fish : *Oncorhynchus mykiss*) / 96 h : 0,36 mg/l.
NOEC (Fish : *Cyprinus carpio*) / 12 jours : 0,25-0,8 mg/l.
NOEC (Fish : *Brachionus calyciflorus*) / 48 h : 0,48 mg/kg.
NOEC (*Pseudokirchneriella subcapitata*, ex: *Selenastrum capricornutum*) / 72 h : 125 µg/l.
NOEC (*Daphnia magna*) / 21 days : ≥ 0,2 mg/l.

Effects on aquatic organisms after discontinuous exposures :

EC50 (*Daphnia magna*) / 5 min./24h for 96h : 27,6-31,8 mg/l.
EC50 (*Daphnia magna*) / 20 min./24h for 96h : 5,5-7,2 mg/l.
EC50 (*Daphnia magna*) / 80 min./24h for 96h : 2,6-3,3 mg/l.
LC50 (*Dicentrarchus labrax*) / 25 min./24h for 504h : > 12 mg/l.

Other harmful effects:

Effects on waste water treatment installations : Chemical oxygen demand (COD): 460 g of O₂ / kg.
Activated sludge respiration inhibition: EC50 / 30 min.: 89 mg/l.

13 – Disposal Considerations

Waste disposal:

Prohibitions :

Do not discharge in the environment.
Avoid or minimize the waste formation.
Do not reject to sewers or public waters.
Incinerate in authorized installation.

Disposal :

Soiled packing:

Cleaning :

Not consigned containers.
Do not require cleaning before disposal.
Incinerate in an authorized installation.

Disposal:

Safety Data Sheet

Product :	Mixel® 432/0	Page : 6/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00

Notice

The user should be aware of the possible existence of national, provincial, municipal or local regulations that may affect waste disposal procedures.

14 – Transport Information

International regulation:

	UN	Label	Packing	class	Hazard
Road/Rail (RID/ADR):	2735	8	III	8	80 CC : C7
Maritime (IMDG):	2735	8	III	8	EmS : 8-05
Air freight (OACI /IATA):	2735	8	III	8	

Proper Shipping Name : 2735 POLYAMINES, LIQUID, CORROSIVE, NOS
 Containing Alkyl propylenediamine.
 IATA passenger : quantity package < 5L instruction : 818
 IATA cargo : quantity package < 60L instruction : 820.

Note

The regulations cited above are those in force as of the date of this writing. Due to the continuous evolution of regulations governing transport of hazardous materials, users are advised to obtain updated information from their supplier if the SDS in their possession is more than 12 months old.

15 – Regulatory Information

Community Regulations:

EEC Labelling:

Hazardous preparation, obligatory labelling (Autoclassification) :
 Concerned.

Identification of the hazardous product: Aliphatic amines.

Symbols and indications of hazard: Irritant (Xi).

Dangerous for the environment (N).

R-phrases:

R 41 : Risk of serious damage to eyes.

R 50 : Very toxic to aquatic organisms.

S-phrases:

S 26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 39 : Wear eye/face protection.

S 24 : Avoid contact with skin.

S 61 : Avoid release to the environment. Refer to special instructions / Safety data sheets.

National Regulations:

France:

Code de la sécurité sociale:

Occupational diseases : concerned.

Table n°49 and 49 bis of the occupational diseases.

The presence of aliphatic amines leads to a special medical supervision according to the french "arrêté du 11/07/77".

Safety Data Sheet

Product :	Mexel®432/0	Page : 7/7
Date : December 20 th , 2006	Version : 5.50	Cancel and replace version 5.00

Recording numbers:

European Inventories (EINECS, ELINCS): All the components of this preparation are registered in the EINECS or ELINCS inventories or in the NLP list.

Others International Inventories: All the components of this preparation are registered in the TSCA (US), AICS (Australia), or ECL (Korea) inventories.
None of the components of this preparation are listed as carcinogen by IARC, NTPC or OSHA inventories.

Note

The legal information cited this section (heading) reflects only the principal regulations specifically applicable to the subject of these SDS. The basic Community texts cited are the subjects of updates and are transcribed in national law.

Users are encouraged to refer to all applicable measures or provisions, international, national and local.
Users should be aware of the possible existence of other provisions supplementing these regulations.

16 – Other Information

Relevant R phrases:

R22: Harmfull if swallowed.

R35: Causes severe burns.

R38: Irritating to skin.

R36/38: Irritating to eyes and skin.

R50: Very toxic to aquatic organisms.

R50/53: Very toxic to aquatic organisms, may cause long-term adverses effects in the aquatic environment.

R52/53: Harmful to aquatic organisms, may cause long-term adverses effects in the aquatic environment.

Update:

This SDS was updated (see date in top of page).

The modification since the last version are indicated with (*).

Author:

SDS worked out by Mexel® SA, according to standard NF ISO 11014-1 and the amended decree of 5 January 1993 transcribing in French regulation the Directive 91/155/EEC as last amended by Directive 2001/58/EC.

Advice to users

This SDS supplements the technical notice but does not replace it. The information which it contains is based on the best data available as of the date of issuance, as are references to regulations and laws. It is given in good faith.

Users should be aware of potential risks if the product is used for purpose other than those for which it is intended.

The user is responsible for observing the regulations governing the usage of such products, and for observing appropriate precautions in usage, handling, and storage.

The laws and regulations cited in this document should not be considered an exhaustive listing ; they are mentioned to assist users in the proper usage of this product, but it remains the responsibility of users to observe all laws and regulations governing its usage.

End of the document: contains 7 pages.

SEASONAL PUMP OPERATIONS

The number of pumps operated at the Pentagon HRP varies by season. The table summarizes typical pump operations.

Seasonal Pump Operations				
Season	Months	Number of Pumps in Operation	Flow (MGD)	Intake Velocity (ft/s)
Winter	December - February	1-2	16-32	0.49-0.96
Spring	March - May	2-3	32-49	0.96-1.51
Summer	June - August	7-8	113-130	3.48-4.0
Fall	September - November	3-4	49-65	1.51-2.0

Calculations are shown below:

Winter: 1-2 Pumps

Design Flow [MGD] = 11,250 [GPM] * 1 [pumps] * 60 [min/hr] * 24 [hr/day] = ~16 MGD

Design Flow [MGD] = 11,250 [GPM] * 2 [pumps] * 60 [min/hr] * 24 [hr/day] = ~32 MGD

Flow Range: 16-32 MGD

Spring: 2-3 Pumps

Design Flow [MGD] = 11,250 [GPM] * 2 [pumps] * 60 [min/hr] * 24 [hr/day] = ~32 MGD

Design Flow [MGD] = 11,250 [GPM] * 3 [pumps] * 60 [min/hr] * 24 [hr/day] = ~49 MGD

Flow Range: 32-49 MGD

Summer: 7-8 Pumps

Design Flow [MGD] = 11,250 [GPM] * 7 [pumps] * 60 [min/hr] * 24 [hr/day] = ~113 MGD

Design Flow [MGD] = 11,250 [GPM] * 8 [pumps] * 60 [min/hr] * 24 [hr/day] = ~130 MGD

Flow Range: 113-130 MGD

Fall: 3-4 Pumps

Design Flow [MGD] = 11,250 [GPM] * 3 [pumps] * 60 [min/hr] * 24 [hr/day] = ~49 MGD

Design Flow [MGD] = 11,250 [GPM] * 4 [pumps] * 60 [min/hr] * 24 [hr/day] = ~65 MGD

Flow Range: 49-65 MGD

NPDES PERMIT RATING WORK SHEET

VPDES NO. : VA0032000

<input type="checkbox"/>	Regular Addition
<input type="checkbox"/>	Discretionary Addition
<input checked="" type="checkbox"/>	Score change, but no status Change
<input type="checkbox"/>	Deletion

Facility Name: Pentagon ReservationCity / County: ArlingtonReceiving Water: Roaches Run

Reach Number: _____

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)

2. A nuclear power Plant

3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)☒ NO; (continue)☐ Yes; score is 600 (stop here)☒ NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4961 Other Sic Codes: 9711 _____
 Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input checked="" type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input type="checkbox"/> 7.	7	35
<input type="checkbox"/> 1.	1	5	<input type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: 0Total Points Factor 1: 0

FACTOR 2: Flow/Stream Flow Volume

(Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input checked="" type="checkbox"/> 14	30
Type II: Flow < 1 MGD	<input type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III: Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
Type I/III:	< 10 %	<input type="checkbox"/> 41	0
	10 % to < 50 %	<input type="checkbox"/> 42	10
	> 50 %	<input type="checkbox"/> 43	20
Type II:	< 10 %	<input type="checkbox"/> 51	0
	10 % to < 50 %	<input type="checkbox"/> 52	20
	> 50 %	<input type="checkbox"/> 53	30

Code Checked from Section A or B: 14Total Points Factor 2: 30

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)

<input checked="" type="checkbox"/>	< 100 lbs/day	1	0
<input type="checkbox"/>	100 to 1000 lbs/day	2	5
<input type="checkbox"/>	> 1000 to 3000 lbs/day	3	15
<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Number Checked:

N/A

Points Scored:

0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)

<input checked="" type="checkbox"/>	< 100 lbs/day	1	0
<input type="checkbox"/>	100 to 1000 lbs/day	2	5
<input type="checkbox"/>	> 1000 to 5000 lbs/day	3	15
<input type="checkbox"/>	> 5000 lbs/day	4	20

Code Number Checked:

N/A

Points Scored:

0

C. Nitrogen Pollutants: (check one)

☐ Ammonia ☐ Other: _____

Permit Limits: (check one)

<input checked="" type="checkbox"/>	<i>Nitrogen Equivalent</i>	Code	Points
<input type="checkbox"/>	< 300 lbs/day	1	0
<input type="checkbox"/>	300 to 1000 lbs/day	2	5
<input type="checkbox"/>	> 1000 to 3000 lbs/day	3	15
<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Number Checked:

1

Points Scored:

0

Total Points Factor 3:

0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)☒ NO; (If no, go to Factor 5)Determine the *Human Health* potential from Appendix A. Use the same SIC doc and subcategory reference as in Factor 1.(Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input type="checkbox"/> 7.	7	15
<input checked="" type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10	<input type="checkbox"/> 10.	10	30

Code Number Checked:

1

Total Points Factor 4:

0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

- A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines or technology-based state effluent guidelines) or has a wasteload allocation been given to the discharge?

	Code	Points
<input checked="" type="checkbox"/> YES	1	10
<input type="checkbox"/> NO	2	0

- B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

	Code	Points
<input type="checkbox"/> YES	1	0
<input checked="" type="checkbox"/> NO	2	5

- C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

	Code	Points
<input checked="" type="checkbox"/> YES	1	10
<input type="checkbox"/> NO	2	0

Code Number Checked: A 1 B 2 C 1
 Points Factor 5: A 10 + B 5 + C 10 = 25

FACTOR 6: Proximity to Near Coastal Waters

- A. Base Score: Enter flow code here (from factor 2) 14

Check appropriate facility HPRI code (from PCS):

HPRI#	Code	HPRI Score
<input type="checkbox"/> 1	1	20
<input type="checkbox"/> 2	2	0
<input checked="" type="checkbox"/> 3	3	30
<input type="checkbox"/> 4	4	0
<input type="checkbox"/> 5	5	20

HPRI code checked : 3

Base Score (HPRI Score): 30 X (Multiplication Factor) 0.15 = 4.5

Enter the multiplication factor that corresponds to the flow code: 0.15

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

- B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

Code	Points
<input checked="" type="checkbox"/> 1	10
<input type="checkbox"/> 2	0

- C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see instructions)?

Code	Points
<input type="checkbox"/> 1	10
<input checked="" type="checkbox"/> 2	0

Code Number Checked: A 3 B 1 C 2
 Points Factor 6: A 4.5 + B 10 + C 0 = 14.5

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

<u>Factor</u>	<u>Description</u>	<u>Total Points</u>
1	Toxic Pollutant Potential	0
2	Flows / Streamflow Volume	30
3	Conventional Pollutants	0
4	Public Health Impacts	0
5	Water Quality Factors	25
6	Proximity to Near Coastal Waters	14.5
	TOTAL (Factors 1 through 6)	69.5

S1. Is the total score equal to or greater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

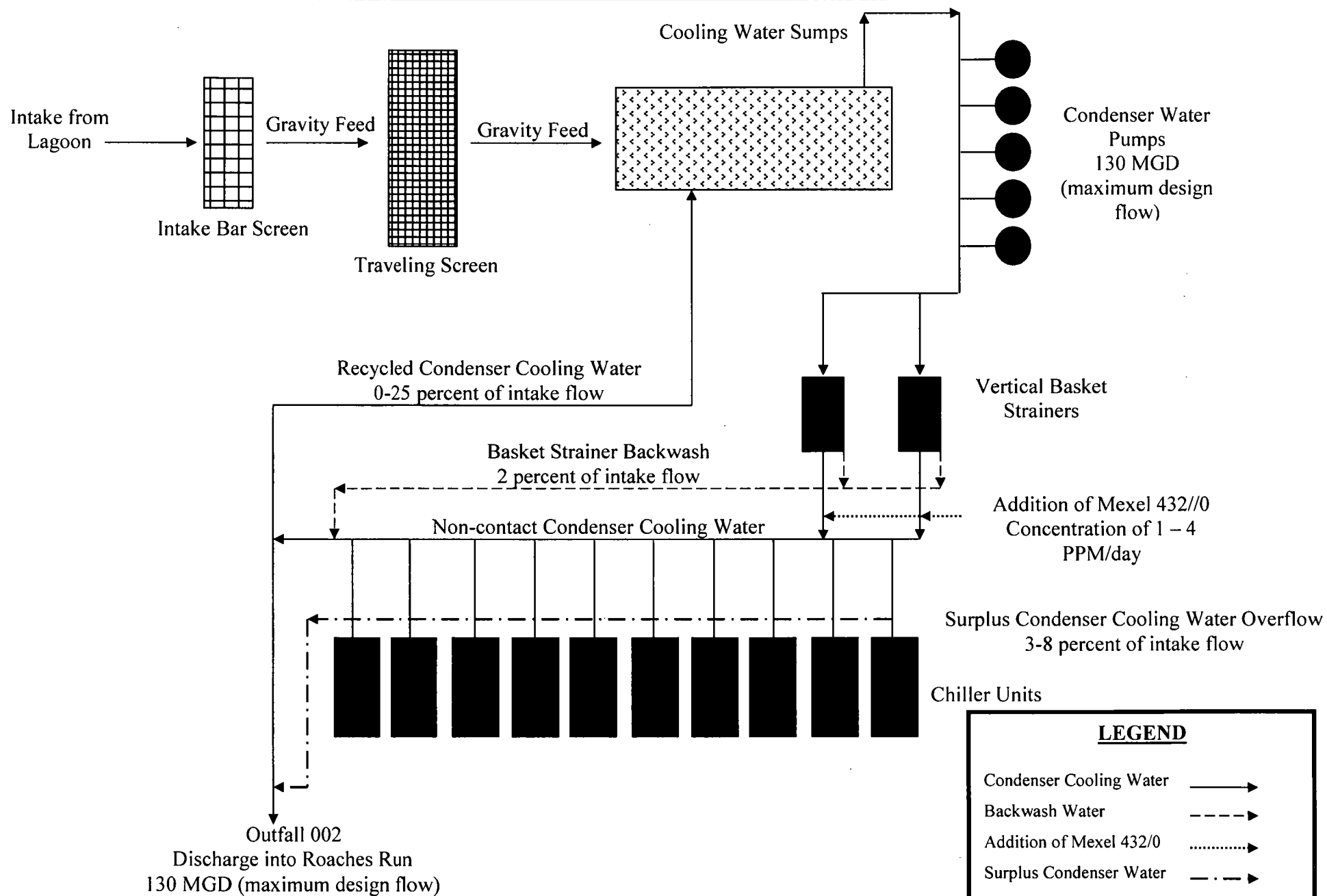
☐ YES; (Add 500 points to the above score and provide reason below:

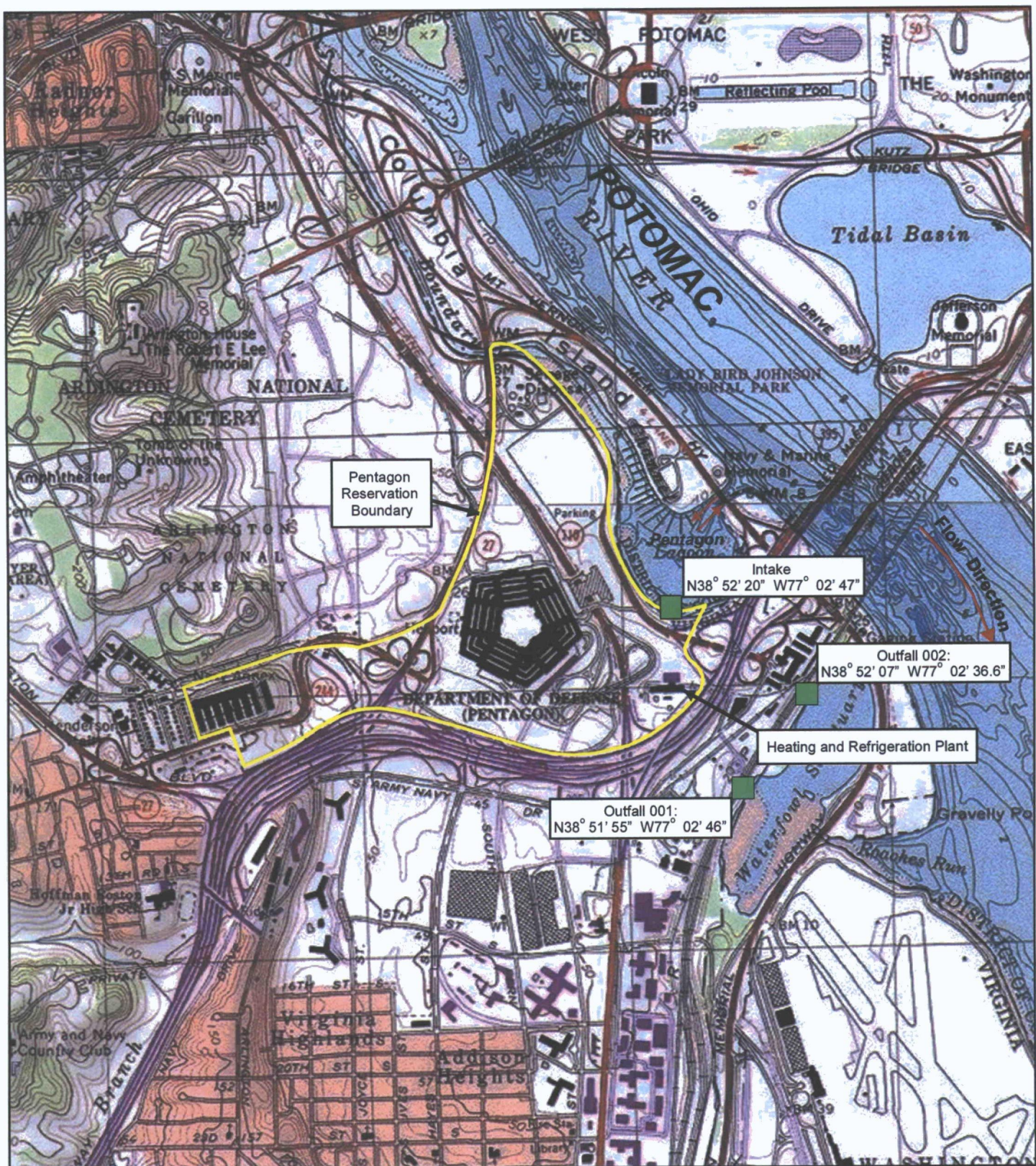
Reason:

NEW SCORE : 68
OLD SCORE : 69.5

Permit Reviewer's Name : Anna Westernik
Phone Number: 703-583-3837
Date: September 28, 2015

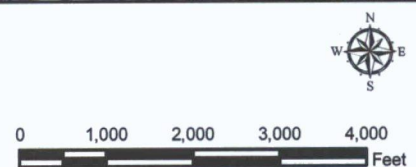
Line Drawing of Pentagon Heating and Refrigeration Plant (HRP) Condenser Water Flow





Map 1: Pentagon Reservation Intake, Outfall 001, and Outfall 002
Pentagon Reservation VPDES Permit

The Pentagon,
Army Navy Drive & Fern Street
Arlington, VA 22202



Pentagon Reservation Chemical Inventory

Chemical Inventory #	Date	Inventory Personnel	Facility	Building	Floor	Room #	Room Name	Location	Other Identifier	Chemical Visually Marked as Inventoried	Photographs Obtained	Chemical / Product Name	Manufacturer	Container Size	Unit of Measure	Quantity (# of containers)	Estimated Current Quantity	Unit of Measure2
1	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	CHEMSTAR 276	CHEMSTAR	800	Gal	2	1600	Gal
2	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	Chemstar 305	Chemstar	500	Gal	1	500	Gal
3	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	CHEMSTAR 421	CHEMSTAR	500	Gal	1	500	Gal
4	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	CHEMSTAR 505	CHEMSTAR	100	Gal	4	400	Gal
5	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	CHEMSTAR 510	CHEMSTAR	50	Gal	1	50	Gal
6	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	N/A	N/A	No	None	CHEMSTAR 634	CHEMSTAR	800	Gal	2	1600	Gal
7	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Dielectric Solvent	Ecolink Inc	1	Gal	2	2	Gal
8	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Windshield Washer Fluid	Royal Farms	1	Gal	1	1	Gal
9	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Cleaner	ZEP 40	16	oz	1	16	oz
10	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Dark Cutting Oil	Hercules Chemical Company	1	lb	1	1	lb
11	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Electrosol	JV Company	1	lb	3	3	lb

Pentagon Reservation Chemical Inventory

Chemical Inventory #	Date	Inventory Personnel	Facility	Building	Floor	Room #	Room Name	Location	Other Identifier	Chemical Visually Marked as Inventoried	Photographs Obtained	Chemical / Product Name	Manufacturer	Container Size	Unit of Measure	Quantity (# of containers)	Estimated Current Quantity	Unit of Measure2
12	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Industrial Enamel Paint	Skilcraft	11	oz	2	22	oz
13	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Methane Alkyd Gloss Enammel	Benjamin Moore & Co.	1	quart	2	2	quart
14	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Paint and Primer	Rustoleum	12	oz	1	12	oz
15	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Ice Machine Cleaner	Virginia KMP	1	gal	1	1	gal
16	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Acrylic Latex Enamel	Duron	12	oz	1	12	oz
17	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Coil-Bright-A	Superco Specialty Products, CNS Industries	18	oz	2	36	oz
18	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Kroil	Kano	1	gal	1	1	gal
19	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Pine Oil Disinfectant Detergent	Skilcraft	1	gal	1	1	gal
20	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Cold Galvanizing Compound (for iron and steel)	Rustoleum	20	oz	1	20	oz
21	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Propane	Bernzomatic	1	lb	2	2	lb
22	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Spray Enamel	Quick Color	10	oz	1	10	oz

Pentagon Reservation Chemical Inventory

Chemical Inventory #	Date	Inventory Personnel	Facility	Building	Floor	Room #	Room Name	Location	Other Identifier	Chemical Visually Marked as Inventoried	Photographs Obtained	Chemical / Product Name	Manufacturer	Container Size	Unit of Measure	Quantity (# of containers)	Estimated Current Quantity	Unit of Measure2
23	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Acrylic Paint	Pro Industrial	1	gal	10	10	gal
24	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Industrial Enamel	Sherwin Williams	16	oz	1	16	oz
25	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Propane Fuel	Turner Tornado	14	oz	17	238	oz
26	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Insul-Spray	Rotanium	1	lb	17	17	lb
27	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Vacuum Pump Oil	Robinair	1	gal	1	1	gal
28	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Circuit Board Cleaner	Misty	11	oz	1	11	oz
29	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	800 Aerosol	Wilsonart International	15	oz	1	15	oz
30	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Corro-Guard-Black	Rotanium	15	oz	1	15	oz
31	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Touch Up Paint	Precision Color	15	oz	1	15	oz
32	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	RTV Cleaner	Superco Specialty Products, CNS Industries	8	oz	2	16	oz
33	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Rid Rust	Rotanium	15	oz	2	30	oz
34	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Hydraulic Fluid	Nordstrom	1	pint	1	1	pint
35	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Signal Red Paint	Sheboygan Paint Company	12	oz	1	12	oz

Pentagon Reservation Chemical Inventory

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36	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Crack Detection	Pioneer	8	oz	1	8	oz
37	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Red GLPT Insulating Varnish	GC Electronic	2	oz	1	2	oz
38	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Superacrylic Enamel	Sherwin Williams	12	oz	1	12	oz
39	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	520 Foam Insulation Adhesive	Armaflex	236	ml	1	236	ml
40	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Windshield Cleaner	I.Schneid	16	oz	1	16	oz
41	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Stencil Mark Ink	Skilcraft	10	oz	1	10	oz
42	9/28/15	NK	Pentagon	HRP	1	106	Bulk Chemical Room	Hazardous Materials Cabinet	N/A	No	No	Lacquer	So Sure	10	oz	1	10	oz
43	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	York International - York C Oil	York International Corp	55	Gal	1	55	Gal
44	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	York International - York C Oil	York International Corp	5	Gal	3	15	Gal
45	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Aeon 500 Petroleum based lubricant SAE 30	Aeon	5	Gal	20	100	Gal
46	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Shell Rotella T Oil 30	Shell	5	Gal	2	10	Gal
47	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Shell Madrela P100	Shell	5	Gal	8	40	Gal
48	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Trane Oil 00022	Trane Co.	2.5	Gal	1	2.5	Gal

Pentagon Reservation Chemical Inventory

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49	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Valvoline 15W-40	Valvoline	1	Gal	1	1	Gal
50	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Robinair Vacuum Pump Oil	Robinair	1	Gal	2	2	Gal
51	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Shell Tellus Plus 46	Shell	5	Gal	5	25	Gal
52	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Valvoline Drive Train SAE 30	Valvoline	1	Gal	1	1	Gal
53	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Mobil DTE FM32	Mobil	5	Gal	1	5	Gal
54	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Harmony HVI R&O Hydraulic Oil	Harmony	55	Gal	1	55	Gal
55	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Mineral Spirits	Mineral	55	Gal	3	165	Gal
56	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Lubemaster ISO 320 Gear Oil	Lubemaster	35	Gal	1	35	Gal
57	9/28/15	NK	Pentagon	HRP	Basement	050	Basement	Caged area with Fuel	On right after entering through door at bottom of stairs	No	No	Coastal R&O Hydraulic Oil	Coastal	5	Gal	1	5	Gal
58	9/28/15	NK	Pentagon	HRP	1	150	Refrigerati on Plant	Next to Pump 2	N/A	No	No	Cleaner Degreaser	State Industrial Products	55	gal	2	110	gal
59	9/28/15	NK	Pentagon	HRP	1	150	Chiller Plant	Next to CH #10	N/A	No	No	Mobilux EP 111	Mobil	5	gal	4	20	gal
60	9/28/15	NK	Pentagon	HRP	1	150	Refrigerati on Plant	Next to CH #10	N/A	No	No	York International - York C Oil	York International Corp	55	gal	1	55	gal
61	9/28/15	NK	Pentagon	HRP	1	150	Chiller Plant	Next to CH #10	N/A	No	No	Mobil DTE Oil Heavy Medium	Mobil	5	gal	3	15	gal
62	9/28/15	NK	Pentagon	HRP	1	150	Refrigerati on Plant	Next to CH #10	N/A	No	No	York International - Waste Oil	York International Corp	55	gal	1	55	gal
63	9/28/15	NK	Pentagon	HRP	1	150	Chiller Plant	Next to CH #10	N/A	No	No	Mobil DTE 25	Mobil	55	gal	1	55	gal
64	9/28/15	NK	Pentagon	HRP	1	150	Refrigerati on Plant	Next to CH #10	N/A	No	No	Mobile - Waste Oil	Mobil	55	gal	1	55	gal

Pentagon Reservation Chemical Inventory

Chemical Inventory #	Date	Inventory Personnel	Facility	Building	Floor	Room #	Room Name	Location	Other Identifier	Chemical Visually Marked as Inventoried	Photographs Obtained	Chemical / Product Name	Manufacturer	Container Size	Unit of Measure	Quantity (# of containers)	Estimated Current Quantity	Unit of Measure2
65	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	Next to chemical testing station	No	No	CHEMSTAR 420	International CHEMSTAR Inc.	55	gal	2	110	gal
66	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Phenolphthalein Indicator (R-0638)	International CHEMSTAR Inc.	1	L	2	2	L
67	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	PTP Indicator CSR-2780	International CHEMSTAR Inc.	10	g	4	40	g
68	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	PH Modifier CSR-6025	International CHEMSTAR Inc.	60	ml	8	480	ml
69	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	PTP Titrant CSR-2781	International CHEMSTAR Inc.	60	ml	5	300	ml
70	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Trace hardness buffer (R-0622)	International CHEMSTAR Inc.	60	ml	11	660	ml
71	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Hardness Indicator (R-0620)	Taylor Technologies	0.45	kg	5	2.25	kg
72	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Acid Starch Indicator Powder	International CHEMSTAR Inc.	100	g	1	100	g
73	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Buffer Solution (R-1099-07) 7.0 PH	Taylor Technologies	1	L	6	6	L
74	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Nitrite Titrant	International CHEMSTAR Inc.	60	ml	4	240	ml
75	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Sulfite Titrant	International CHEMSTAR Inc.	60	ml	11	660	ml
76	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Alkalinity Titrant	International CHEMSTAR Inc.	60	ml	11	660	ml
77	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Conductivity Standard	International CHEMSTAR Inc.	1	L	3	3	L
78	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Conductivity Neutralizing Solution	International CHEMSTAR Inc.	1	L	4	4	L
79	9/28/15	NK	Pentagon	HRP	1	160	Heating Plant	Chemical Testing Station	N/A	No	No	Simple Green Cleaner	Simple Green	1	Gal	1	1	Gal



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

Molly Joseph Ward
Secretary of Natural Resources

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David K. Paylor
Director

Thomas A. Faha
Regional Director

May 27, 2015

Mr. Joseph D. Eichenlaub
Environmental Engineer
Federal Facilities Division
1155 Defense, Pentagon
Butler Building, 3rd Floor
Washington, D.C. 20301-1155

Re: The Pentagon Reservation, Permit #VA0032000

Dear Mr. Eichenlaub:

Attached is a copy of the inspection report generated from the recon inspection conducted at the Pentagon Reservation facility on May 12, 2015.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at 703-583-3905 or amy.dooley@deq.virginia.gov.

Respectfully,

A handwritten signature in cursive script, appearing to read "Amy E. Dooley".

Amy E. Dooley
Environmental Specialist II

Electronic copy sent:

Permits/DMR File, Compliance Manager, Compliance Auditor, Enforcement – DEQ

RECON INSPECTION REPORT

FACILITY NAME: Pentagon Reservation		INSPECTION DATE: <u>May 12, 2015</u>	
		INSPECTOR <u>Amy Dooley</u>	
PERMIT No.: <u>VA0032000</u>		REPORT DATE: <u>May 27, 2015</u>	
TYPE OF FACILITY:	<input type="checkbox"/> Municipal	<input type="checkbox"/> Major	TIME OF INSPECTION:
	<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Minor	
	<input type="checkbox"/> Federal	<input type="checkbox"/> Small Minor	TOTAL TIME SPENT
	<input type="checkbox"/> HP	<input type="checkbox"/> LP	
PHOTOGRAPHS: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		UNANNOUNCED INSPECTION? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
REVIEWED BY / Date: <u>Ghann Q. Galt</u> <u>5-27-15</u>			
PRESENT DURING INSPECTION: <u>DEQ: Lisa Janovsky, Anna Westernnik; Pentagon: Donald Kunej</u>			

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

Upon arrival at the facility at 1100, the guard at the gate indicated that the state vehicle was not allowed admittance due to not being cleared. DEQ staff then parked and walked approximately 30 minutes to the facility. A pre-inspection meeting was conducted with the individuals annotated on the attached sign-in sheet.

After the pre-inspection meeting, Mr. Donald Kuney, the Pentagon Heating and Refrigeration Plant Manager, gave DEQ staff a tour of the facility from the two intake locations, through the heating and cooling process, and Outfall 002.

The facility had constructed two dewatering structures in order to filter the water pumped during intake infrastructure maintenance. The water discharging from the dewatering structure was observed flowing through sediment and discharging into an adjacent municipal storm sewer system drain. A small gravel bar (approximately 10 inches long and 2 inches high) was observed perpendicular to the drain. A bivalve shell was observed adjacent to the drain. Slightly turbid water and sediment was observed in the storm drain inlet.

VA DEQ Recon Inspection Report

Permit #	VA0032000
Permit #	

EFFLUENT FIELD DATA:

Flow	<input type="text"/> MGD	Dissolved Oxygen	<input type="text"/> mg/L	TRC (Contact Tank)	<input type="text"/> mg/L
pH	<input type="text"/> S.U.	Temperature	<input type="text"/> °C	TRC (Final Effluent)	<input type="text"/> mg/L
Was a Sampling Inspection conducted? <input type="checkbox"/> Yes (see Sampling Inspection Report) <input checked="" type="checkbox"/> No					

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall:	<input checked="" type="checkbox"/> Shore based <input type="checkbox"/> Submerged	Diffuser?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Are the outfall and supporting structures in good condition?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
3. Final Effluent (evidence of following problems):	<input type="checkbox"/> Sludge bar	<input type="checkbox"/> Grease	
	<input type="checkbox"/> Turbid effluent <input type="checkbox"/> Visible foam	<input type="checkbox"/> Unusual color	<input type="checkbox"/> Oil sheen
4. Is there a visible effluent plume in the receiving stream?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
5. Receiving stream:	<input type="checkbox"/> No observed problems <input type="checkbox"/> Indication of problems (explain below)		
<u>Comments:</u>			

REQUEST for CORRECTIVE ACTION:

None

NOTES and COMMENTS:

DEQ staff made the following comments during the inspection. 1. A portion of the dewater structure and silt fence had fallen down. In order for the structures to work properly, the fabric and silt fence should be installed per the structure's specifications. 2. If the water sample results indicate a high TSS level, the facility may want to consider adding a second silt fence after the sediment area and a larger gravel dam before the storm drain.

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 James Graves james.m.graves@as.civ@mail.mil 703-697-4478
 Keyonda Newby keyonda.l.newby.ctr@mail.mil 703-697-4478

To: Anna Westernik
From: Rebecca Shoemaker
Date: November 2, 2015
Subject: Planning Statement for the Pentagon Reservation
Permit Number: VA0032000

Information for Outfall 001:

Discharge Type: Industrial
Discharge Flow: 130 MGD
Receiving Stream: Roaches Run
Outfall 001 Latitude / Longitude: 38° 51' 55" -77° 02' 46"
Outfall 002 Latitude / Longitude: 38° 52' 07" -77° 02' 36.6"
Rivermile Outfall 001: 1A-ROR.46
Rivermile Outfall 002: 1A-ROR.46
Streamcode: 1A-ROR
Waterbody: VAN-A12E
Special Standards: Class II, Section 6, special stds. b, y
Drainage Area Outfall 001: 0.53 mi²
Drainage Area Outfall 002: 0.02 mi²

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges to Roaches Run, which has not been monitored or assessed. Roaches Run drains into the tidal freshwater Potomac River, which falls under the jurisdiction of the District of Columbia. The following is the water quality summary for this segment of the Potomac River, as taken from the District of Columbia 2014 Integrated Report:

Waterbody Name Potomac DC, Waterbody ID DCPMS00E_02 (Key Bridge, Georgetown, To Hains Point (Pms10 To Pms 29)), 1.38 square miles

The overall status of this waterbody is impaired.

- *The navigation use is assessed as fully supporting*
- *The primary contact recreation use is assessed as not supporting due to exceedences of the E. coli, pH, and turbidity criteria. A fecal coliform bacteria TMDL was completed in 2004 and was revised for E. coli bacteria in 2014.*
- *The secondary contact recreation use is assessed as not supporting due to exceedences of the pH and turbidity criteria.*
- *The aquatic life use is assessed as not supporting due to exceedences of the pH and turbidity criteria.*
- *The fish consumption use is assessed as not supporting due to a public health advisory urging non-consumption of catfish, carp, and eel and limited consumption of other fish caught in all District of Columbia waters due to the presence of PCBs.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the District of Columbia's 2014 Integrated Report							
Potomac River	Primary Contact Recreation	E. coli	0.5 mile	Potomac River and Tributaries E. coli TMDL (D.C.) 12/31/2014	None (not expected to discharge pollutant)	---	---
		pH		---	---	D.C. TMDL Schedule is unknown	
		Turbidity		---	---		
	Secondary Contact Recreation	pH		---	---		
		Turbidity		---	---		
	Aquatic Life	pH		---	---		
		Turbidity		---	---		
	Fish Consumption	PCBs		Tidal Potomac River Watershed PCBs TMDL 10/31/2007	None	---	---

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

The Potomac River, which is located approximately 0.5 mile downstream from Outfalls 001 and 002, is included in the Tidal Potomac River Watershed PCBs TMDL (completed 10/31/2007). Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff recommends that this facility perform low-level PCB monitoring during the upcoming permit cycle. It is recommended that this facility collect two samples during two different seasons (i.e. summer and winter) using EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. PCB data generated using Method 1668 revisions A, B, and C are acceptable; however, data generated using version A is preferred.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

Dissolved Oxygen Criteria (9 VAC 25-260-185)

Designated Use	Criteria Concentration/Duration	Temporal Application
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water ^{1,2}	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity)	Year-round
	30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C	
	Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean > 3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

¹See subsection aa of 9 VAC 25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

²In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Pentagon Reservation

Permit No.: VA0032000

Receiving Stream: Roaches Run

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO ₃) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO ₃) =	121 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	SU
10% Maximum pH =	SU	30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	130 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	5.84E+01	7.09E+00	na	--	5.84E+01	7.09E+00	na	--	--	--	--	--	--	--	--	--	5.84E+01	7.09E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	5.84E+01	7.09E+00	na	--	5.84E+01	7.09E+00	na	--	--	--	--	--	--	--	--	--	5.84E+01	7.09E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis(2-Chloroethyl) Ether ^C	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis(2-Ethylhexyl) Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	4.9E+00	1.3E+00	na	--	4.9E+00	1.3E+00	na	--	--	--	--	--	--	--	--	--	4.9E+00	1.3E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	6.7E+02	8.7E+01	na	--	6.7E+02	8.7E+01	na	--	--	--	--	--	--	--	--	--	6.7E+02	8.7E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD ^C	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE ^C	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4-Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	--	--	--	--	--	--	--	--	1.5E+02	1.7E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	2.1E+02	2.4E+01	na	4.6E+03	2.1E+02	2.4E+01	na	4.6E+03	--	--	--	--	--	--	--	--	2.1E+02	2.4E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	4.8E+00	--	na	--	4.8E+00	--	na	--	--	--	--	--	--	--	--	--	4.8E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	1.4E+02	1.4E+02	na	2.6E+04	1.4E+02	1.4E+02	na	2.6E+04	--	--	--	--	--	--	--	--	1.4E+02	1.4E+02	na	2.6E+04

Notes

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information
Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)	Note: do not use QL's lower than the minimum QL's provided in agency guidance
Antimony	6.4E+02	
Arsenic	9.0E+01	
Barium	na	
Cadmium	7.9E-01	
Chromium III	5.2E+01	
Chromium VI	6.4E+00	
Copper	6.3E+00	
Iron	na	
Lead	1.0E+01	
Manganese	na	
Mercury	4.6E-01	
Nickel	1.4E+01	
Selenium	3.0E+00	
Silver	1.9E+00	
Zinc	5.5E+01	

VPDES Permit Renewal Application - Permit No. VA0032000

Form 2C - Detected Analytes					
Pollutant and CAS No. (if available)	Concentration	Units	RL (listed in lab reports)	No. of Analyses	Notes
Total Organic Carbon (TOC)	3.5	mg/L	1.0	1	
Total Suspended Solids (TSS)	3.0	mg/L	2.0	1	
Color	100	chloroplat	5	1	
Fecal Coliform	25.9	MPN/100 mL		1	
Nitrate-Nitrite (as N)	0.52	mg/L	0.10	1	
Nitrogen, Total Organic (as N)	1.12	mg/L	0.10 mg/L (for Nitrate, Nitrite); 0.5 mg/L (for TKN)	1	
Alpha, Total	0.247	pCi/L	3.00	1	
Beta, Total	0.652	pCi/L	4.00	1	
Sulfate (as SO ₄)	25	mg/L	5.0	1	
Sulfite (as SO ₃)	1.28	mg/L	1	1	*Measured onsite using a Hach Sulfite Test Kit, Model SU-5
Barium, Total	41	µg/L	1.0	1	
Boron, Total	24	µg/L	10	1	
Iron, Total	110	µg/L	100	1	
Magnesium, Total	7,200	µg/L	1000	1	*Dilution factor of 10
Manganese, Total	48	µg/L	1.0	1	
Metals, Cyanide, and Total Phenols					
Copper, Total	16	µg/L	1.0	1	
Nickel, Total	1.0	µg/L	1.0	1	
Phenols, Total	0.240	mg/L	0.050	1	

Attachment A - Detected Analytes					
Chemical	EPA Analysis No.	QL (listed in lab reports)	Reporting Results	Units	Sample Type
Metals					
Copper, Dissolved	EPA 200.8	1.0	27	µg/L	G
Miscellaneous					
<i>E. coli</i> / <i>Enterococcus</i>	2010 Quantitative Analysis for Coliforms/ Enterococci (Non-Potable)	*RL not listed	For <i>E. coli</i> = 21.6 For <i>Enterococci</i> = 86.3	MPN/100 mL	G

Pentagon Reservation (VA0032000)		
Total Recoverable Copper Data		
January 2011 -- August 2015		
Date DMR Due	Concentration Maximum	Limit Maximum
10-Feb-11	12	34
10-Mar-11	100	34
10-Apr-11	17	34
10-May-11	7.6	34
10-Jun-11	11	34
10-Jul-11	5.8	34
10-Aug-11	15	34
10-Sep-11	7.1	34
10-Oct-11	11	34
10-Nov-11	38	34
10-Dec-11	12	34
10-Jan-12	15	34
10-Feb-12	0	34
10-Mar-12	0	34
10-Apr-12	11	34
10-May-12	17	34
10-Jun-12	17	34
10-Jul-12	24	34
10-Aug-12	16	34
10-Sep-12	7.1	34
10-Oct-12	15	34
10-Nov-12	13	34
10-Dec-12	12	34
10-Jan-13	20	34
10-Feb-13	5.6	34
10-Mar-13	33	34
10-Apr-13	14	34
10-May-13	12	34
10-Jun-13	19	34
10-Jul-13	9.2	34
10-Aug-13	25	34
10-Sep-13	8.4	34
10-Oct-13	6.6	34
10-Nov-13	19	34
10-Dec-13	14	34
10-Jan-14	18	34
10-Feb-14	6.8	34
10-Mar-14	70	34
10-Apr-14	22	34
10-May-14	26	34
10-Jun-14	29	34
10-Jul-14	6.8	34
10-Aug-14	9.9	34
10-Sep-14	10	34
10-Oct-14	15	34
10-Nov-14	20	34
10-Dec-14	16	34
10-Jan-15	31	34
10-Feb-15	5.4	34
10-Mar-15	6.3	34
10-Apr-15	43	34
10-May-15	42.5	34
10-Jun-15	45	34
10-Jul-15	11	34
10-Aug-15	19	34
10-Sep-15	28	34
	>Current Limit of 34 µg/L	
	>Current Limit of 32 µg/L	

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Facility = Pentagon Reservation
Chemical = Copper (Jan 2011-Aug 2015)
Chronic averaging period = 4
WLAa = 32
WLAc = 22
Q.L. = 1
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 56
Expected Value = 18.3881
Variance = 193.129
C.V. = 0.755763
97th percentile daily values = 52.1681
97th percentile 4 day average = 34.1984
97th percentile 30 day average = 23.1607
< Q.L. = 2
Model used = delta lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 32
Average Weekly limit = 32
Average Monthly Limit = 32

The data are:

12
100
17
11
5.8
15
7.1
11
38
12
15
11
17
17
24
16
7.1
15
13
12

20
5.6
33
14
12
19
9.2
25
8.4
6.6
19
14
18
6.8
70
22
26
29
6.8
9.9
10
15
20
16
31
5.4
6.3
43
42.5
45
11
19
28
0
0
7.6

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Facility = Pentagon Reservation
Chemical = Copper (Sep 2014 - Aug 2015)
Chronic averaging period = 4
WLAa = 32
WLAc = 22
Q.L. = 1
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 12
Expected Value = 24.7447
Variance = 409.761
C.V. = 0.818056
97th percentile daily values = 73.6139
97th percentile 4 day average = 47.9946
97th percentile 30 day average = 31.6964
< Q.L. = 0
Model used = lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 32
Average Weekly limit = 32
Average Monthly Limit = 32

The data are:

15
20
16
31
5.4
6.3
43
42.5
45
11
19
28

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Facility = Pentagon Reservation

Chemical = Nickel

Chronic averaging period = 4

WLAa = 420

WLAc = 48

Q.L. = 1

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 1

Variance = .36

C.V. = 0.6

97th percentile daily values = 2.43341

97th percentile 4 day average = 1.66379

97th percentile 30 day average = 1.20605

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

Pentagon Nitrogen Study Analytical Results

Month	Date Sampled	Days	Flow MGD	Nitrate + Nitrite Intake (mg/L)	Nitrate + Nitrite Outfall (mg/L)	TKN Intake (mg/L)	TKN Outfall (mg/L)	Total Nitrogen Intake (mg/L)	Total Nitrogen Outfall (mg/L)	Difference (mg/L)	Total Nitrate + Nitrite (lb/month)	Total TKN (lb/month)	Total Nitrogen Loading (lb/month)
Dec'14	12/10/2014	31	7	1.1	1.1	0.57	<0.57	1.67	1.1	-0.57	0	1031.57	-1031.57
Nov'14	11/13/2014; 11/25/2014	30	8	0.8	0.85	0.29	<0.57	1.09	0.85	-0.24	-100.08	0	-480.38
Oct'14	10/14/2014; 10/27/2014	31	11	0.8	0.87	3.4	2.9	4.2	3.72	-0.48	-199.08	1422	-1365.09
Sept'14	9/17/2014; 9/30/2014	30	17.5	0.6	0.61	4.23	1.95	4.5	2.22	-2.28	-43.79	9982.98	-9982.98
June'14	6/5/2014; 6/11/2014	30	12	1.25	1.25	1.95	2.25	3.4	3.2	-0.2	0	-900.72	-600.48
May'14	5/22/2014	31	14	1.3	1.3	<0.56	<0.56	1.3	1.3	0	0	0	0
Apr'14	4/1/2014	30	9	1.2	1.3	<0.55	1.1	1.2	2.4	1.2	-225.18	-2476.98	2702.16
Mar'14	3/10/2014	31	7	1.4	1.8	<0.55	<0.55	1.4	1.8	0.4	-723.91	0	723.91
Feb'14	2/18/2014; 2/27/2014	28	8	0.89	1.8	1.6	1.6	2.49	3.4	0.91	-1700.03	0	1700.03
Jan'14	1/13/2014	31	8	1.6	1.7	1.1	<0.53	2.7	1.7	-1	-206.83	2275.15	-2068.32
Total Nitrogen Loading for CY 2014													-10402.73

Note:

1. + difference indicates the TN is higher in the outfall than intake

2. - indicates the TN is lower in the outfall than intake

FINAL REPORT**TOTAL NITROGEN LEVELS IN THE DISCHARGE FROM THE PENTAGON VPDES
PERMIT NO. VA0032000**

Per the Virginia Department of Environmental Quality (DEQ) request of December 4, 2013, following are the results of a study of the Pentagon's Heating and Refrigeration Plant (HRP) intake and outfall concentrations of nitrogen.

The HRP consists of 10 chillers that use water from Potomac River (intake) and discharge the non-contact cooling water into Roaches Run through Outfall 2 and Outfall 1 (situational requirement) with addition of Mexel 432/0 as a copper inhibitor. No other additional chemicals or adjustments are made to the non-contact cooling water in the entire loop system.

In the letters dated April 26, 2013 and December 4, 2013, DEQ suggested taking four separate seasonal intake sample events to determine total nitrogen (TN) from the intake as well as in the outfall due to concerns that the Pentagon is exceeding its limit of 2,300 pounds of TN discharged per year. As per the guidance provided by the above communication, the Pentagon Reservation implemented a comprehensive plan to evaluate the total nitrogen discharge to Roaches Run by analyzing the intake and outfall samples.

The study objectives were as follows:

1. Monthly intake and outfall sampling was conducted (September 2013 through June 2014) to calculate the TN discharge.
2. Intake and discharge flows were estimated during the sampling times.
3. Based on the analytical results of nitrate, nitrite, and total Kjeldahl nitrogen (TKN), the actual mass of TN discharged was calculated.
4. The total consumption of Mexel 432/0 in 2013 and 2014 is provided to VADEQ as part of this report.

Sampling procedures

Monthly sampling was scheduled for HRP Outfall 1 (when operational) and Outfall 2 for TKN, nitrate, and nitrite. A 24-hr composite sample was collected for nitrate and nitrite in non-preserved 100 ml plastic bottle, and TKN in a 100 ml plastic bottle preserved with H₂SO₄. For intake water sampling, samples were collected for nitrite and nitrate in non-preserved 100ml plastic bottle and TKN in 100 ml plastic bottles with H₂SO₄. Samples were packed in a cooler with ice and shipped overnight to an accredited laboratory with appropriate chains-of-custody. Reporting requirements were limited to forwarding the laboratory results in compliance with Virginia Pollutant Discharge Elimination System (VPDES) to the client.

The intake and outfall sampling location photos are provided along with this report.

Conclusions

Per the December 4, 2013 DEQ letter:

- 1) *At least four separate seasonal intake sample events to determine TN (computed as the sum of nitrate-nitrite as nitrogen and TKN) shall be taken concurrently with the discharge TN sampling or effluent sampling. Effluent sampling shall be conducted after allowing sufficient time for system pass-through.*

Sampling was conducted at the intake and outfall monthly from September 2013 through June 2014. Samples were analyzed for nitrate, nitrite, and TKN. Sampling analytical results are presented in the attached table. Laboratory analytical reports are also attached.

- 2) *Intake and discharge flows shall be estimated/measured at the time of sampling.*

Intake and discharge flows were estimated at the time of sampling. Flows are indicated on the attached table.

- 3) *All certificates of analyses for the data must state the location of the sampling.*

The certificates of analyses, attached, state the location of the sampling.

- 4) *The estimated mass of nitrogen must be calculated at the intake and the actual mass calculated at the outfall.*

The mass of nitrogen was calculated at both the intake and the outfall and is presented in the attached table.

- 5) *The mass of nitrogen at the intake shall be subtracted from that at the outfall. The total pounds of nitrogen remaining can be attributed to additions at the Pentagon (e.g., Mexel 432/0).*

The mass of nitrogen at the intake was subtracted from that at the outfall for each sampling event. This information is provided on the attached table.

- 6) *The Pentagon is requested to supply DEQ with information regarding the volume of Mexel 432/0 used in calendar year 2014.*

The total Mexel use for calendar year 2014 was calculated to be 414 gallons. An average of 0.97 gallons per day of Mexel was flushed through the system at 1 part per million (ppm) each day to provide a coating for the copper tubes. This method of adding Mexel was effective in reducing the copper discharge into the Roaches Run. The literature data on Mexel decomposition in natural waters did not indicate the release of nitrate or nitrites.

- 7) *This information must be recorded in a table and compiled in a report with a narrative summary that includes the problem being studied, the study procedure, the results of the study, and a conclusion.*

The study results are included in the attached table. This report above summarizes the problem being study and the study procedure above. Following are the results of the study and the conclusion.

Out of the total 18 sampling events, collected from September 2013 through June 2014, the total nitrogen from the intake waters exceeded the total nitrogen in the outfall (difference of 35,176 pounds per day). Therefore, we can conclude that the nitrogen in the outfall is not solely due to the use of copper inhibitor Mexel.

Recommendations

Based on the results of this study, and in discussions with DEQ, we propose the following:

- 1) Pentagon Reservation will continue to use Mexel 432/0 at rate of 3 ppm. This feed rate will be adjusted to a higher or lower value in subsequent weeks as a maintenance dose, depending upon the copper results in the Outfall.
- 2) The Pentagon Reservation will implement a new sampling plan in which we will collect 24-hour composite intake water samples on a quarterly basis. The samples will be analyzed for nitrogen (nitrates, nitrites, and TKN) and will be reported each quarter for a year.

Clean Water Act §316(b)
Alternate Schedule Request

Clean Water Act §316(b) Alternate Schedule Request

Pentagon Heating and Refrigeration Plant

Final regulations to establish requirements for cooling water intake structures at existing facilities were published in the Federal Register on August 15, 2014 (i.e. regulations implementing §316(b) of the Clean Water Act) with an effective date of October 14, 2014. The Pentagon Heating and Refrigeration Plant (HRP) is subject to the regulations. The design intake flow of the HRP is greater than 2 million gallons per day (MGD) but the historical actual intake flows are less than 125 MGD; therefore, the following submittals are expected to be required:

- §122.21(r)(2) Source Water Physical Data
- §122.21(r)(3) Cooling Water Intake Structure Data
- §122.21(r)(4) Source Water Baseline Biological Characterization Data
- §122.21(r)(5) Cooling Water System Data
- §122.21(r)(6) Chosen Method(s) of Compliance with the Impingement Mortality Standard
- §122.21(r)(7) Entrainment Performance Studies
- §122.21(r)(8) Operational Status

As allowed under §125.95(a)(2), the Department of Defense (DoD) would like to request an alternate schedule for the submittals listed above. Since §316(b) of the Clean Water Act did not become effective until October 14, 2014, the DoD will not be able to develop the required information for the HRP by June 30, 2015, the date, including a granted extension, when the permit renewal application is due. An extension until June 30, 2017 is requested. All required information will be submitted 270 days prior to the new permit's expiration date.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated industrial non-contact cooling wastewater into a water body in Arlington County, Virginia.

PUBLIC COMMENT PERIOD: June 13, 2016 to July 13, 2016

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board.

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Department of Defense, Washington Headquarters Services, Federal Facilities Division, Room 5E 330A, 1155 Defense, Pentagon, Washington DC 20030. VA0032000

NAME AND ADDRESS OF FACILITY: The Pentagon Reservation, 425 Old Jefferson Davis Highway, Arlington, VA 22202.

PROJECT DESCRIPTION: The Department of Defense has applied for a reissuance of a permit for the federally owned Pentagon Reservation. The applicant proposes to release treated industrial cooling wastewater at a maximum rate of 130 million gallons per day into a water body. The facility proposes to release the treated industrial wastewater into Roaches Run in Arlington County in the Potomac River/Fourmile Run/Pimmit Run watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, Temperature, and Total Recoverable Copper. The facility will monitor the influent and effluent for nitrate/nitrite as nitrogen, Total Kjeldahl Nitrogen, and Total Nitrogen. Effluent will be monitored for hardness and chronic toxicity. The permit includes requirements for cooling water intake structures.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Anna T. Westernik

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3837 E-mail: anna.westernik@deq.virginia.gov

Westernik, Anna (DEQ)

From: Hillman, Brett [brett_hillman@fws.gov]
Sent: Monday, October 26, 2015 3:58 PM
To: Westernik, Anna (DEQ)
Subject: Pentagon Reservation VA0032000 316(b) review - USFWS Comments

Hi Anna,

Thanks for providing us with the opportunity to comment on the reissuance of this permit with respect to the new 316(b) rules.

The permittee has requested an alternate schedule for compliance with the 316(b) rules. An extension until June 30, 2017 has been requested. By that date, the permittee will have provided the required materials to DEQ. We request the opportunity to comment once we have had time to review those materials. In particular, we request the opportunity to review any studies that quantify or estimate entrainment or impingement rates.

The Greater Atlantic Region of NOAA Fisheries has jurisdiction over federally listed species in Chesapeake Bay. If you have not done so already, we recommend you contact Dave O'Brien and/or Simeon Hahn of that agency regarding 316(b) review of this permit.

Thanks again for coordinating. Please let me know if you have any questions.

Best,
Brett

Brett Hillman
Fish and Wildlife Biologist
U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Phone: 804-824-2420
Fax: 804-693-9032
Email: brett_hillman@fws.gov

Westernik, Anna (DEQ)

From: Christine Vaccaro - NOAA Federal [christine.vaccaro@noaa.gov]
Sent: Thursday, January 21, 2016 12:31 PM
To: Westernik, Anna (DEQ)
Subject: Re: Pentagon -- Review of the 316(b) Alternate Schedule Request

Anna,
I'm sorry I never responded to this--316(b) has been a bit of an undertaking. We have no objections to this facility using the alternate schedule clause. There are several other facilities in your neck of the woods doing the same thing. I am going to be providing some guidance on our process and recommended BMPs via email to you and several others as an informal form of guidance. When the time comes that we are entering the permit renewal (after this alternate schedule), we can begin our official 316(b) review with you. In the meantime, we hope our informal guidance will help you, at the state agency, guide the applicants in the best way you can.

Stay tuned.

-Chris

Chris Vaccaro
Fisheries Biologist
Protected Resources Division
NOAA Fisheries, Greater Atlantic Region
Gloucester, MA
Phone: 978-281-9167
Email: christine.vaccaro@noaa.gov

On Mon, Nov 23, 2015 at 2:42 PM, Westernik, Anna (DEQ) <Anna.Westernik@deq.virginia.gov> wrote:

Ms. Vaccaro,

Attached is a revised 316(b) Alternate Schedule Request for the Pentagon. Please let me know if you have any objections to the change in the information submittal date from June 30, 2017 to 270 days prior to the permit expiration date. The requirement for submittal 270 days prior to the permit expiration date is derived from 40 CFR §122.21.

Thanks,

Anna Westernik